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AND

NAVAL JOURNAL.

MONTHLY.

VOL. III.

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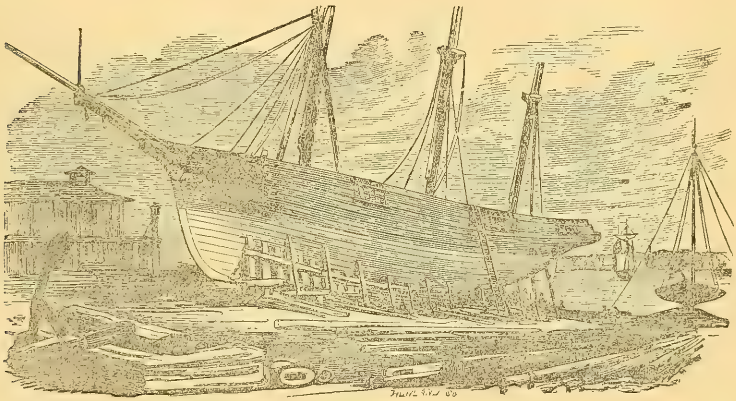


THIRD VOLUME OF THE U. S. NAUTICAL MAGAZINE AND NAVAL JOURNAL.

The history of every enterprise furnishes its lights and shadows of progress; and periods have arisen, in the course of every undertaking, when courage and fortitude were demanded to conquer success. This is no less true in the periodical than in the manufacturing world—in the prosecution of civil or warlike enterprises. The history of this Journal has afforded no exception to the general rule. Its Editors and Proprietors have sacrificed much, and toiled long to no end, if, at the end of this time, the public appreciation of their work should fail to afford a tangible basis for future operations. In entering upon the second year of their labors, they look back with much satisfaction—not upon the time or money spent in opening a *new* field of journalism, embracing the ship-yard and the ship, however gratifying it may be to have been the first to take the pen in behalf of the adze and the marlin-

spike—but upon the amount of usefulness, which, under all the difficulties of an untried position, and in the face of a most disastrous period of mercantile depression, they have been able to render the maritime community. It is very true, indeed, that they have not been able to accomplish all they desired, in giving intrinsic qualities of unparalleled value to the pages of the Magazine, but they have twice enlarged, furnished some beautiful lithographs, and given the draughts of some of the finest vessels of every description known in the waters of the United States. In these respects, at least, they have succeeded equal to their expectation for the first year. They do not despair, however, of ultimately reaching the goal for which they started. The best plans cannot be executed at once, even if we commanded all the money, men and steam engaged in the capture of Sebastopol. The wind will not always blow from one quarter; and, "Time," that brings the seasons at their annual periods, will also gather for us the necessary elements of perfection to stand forth reflected from our pages in future volumes. Thus do we view the consequences of perseverance and untiring effort in conducting the NAUTICAL MAGAZINE.

Believing that it will still farther increase the general interest, we have introduced an additional feature by furnishing a NAVAL DEPARTMENT; and, in doing so, we have been favored in our selection of a Naval Officer, who, by position, as well as by qualification, is eminently the person to furnish reliable intelligence.

Thus qualified to furnish the information required, we feel assured that the reading public cannot invest the same amount of money in any other way that will yield them more information upon the science and practice of ship-building, marine topics, and naval affairs, than may at all times be found in the *United States Nautical Magazine and Naval Journal.*

During the past year we have furnished more examples in ship-building than can be found within the lids of any treatise whatever. The particulars of construction, not only of hull, but of engines and spars, will be found complete for more than THIRTY vessels of every description; some of them the most celebrated of their class. We have furnished draughts, or mould-loft tables, of twenty-four vessels, viz.: two war-steamers; three war-ships; two steam-ships; two screw-propellers; four ships; two barks; one brig; five schooners; and last, but not least important, one surf-boat. We have illustrated several valuable improvements connected with the shipping; recorded the logs of many voyages, and the best performances of many fine ships. As volumes of reference for the various matters to which the NAUTICAL MAGAZINE is devoted, the literature of this country would be barren without it. Indeed, the value of the work to libraries, lyceums, &c., is now becoming apparent; and orders for the first volume can no longer be filled. The expense of stereotyping appeared too

great at the commencement of our undertaking to be warranted by our prospects, and, consequently, the first volume will be lost to all, save the few of generous faith and intelligence, who first took hold of our prospectus, and gave us their encouragement.

We regret our inability to furnish a further supply of the first six numbers; and can only say, there is ample time in the future. We have now arrived at a standard wherewith to measure the loss of nautical information and experience, for, at least, the past fifteen years, and we might truly say, fifty years, in the United States. In all the magnificent collections of books upon science and art in this country, or in the world, we shall look in vain for descriptive intelligence upon the condition of ship-building and navigation, at any former period. For one brief year, in the United States, a small daguerreotype of the ship-yard and the ship alone can be found. Behold! let twenty years pass away, and we shall know no more of the fine forms and build of our present clipper-ships and steamers, than is now to be found in the treacherous archives of tradition, respecting the first monthly packet ships that sailed between New-York and Liverpool; and only a little while longer, no more will be known of the *Sea-Witch*, the *Yacht America*, or the *Great Republic*, than is now possessed in relation to the ships of Columbus, or the *Mayflower*, the bark of the New-England Pilgrims, unless the pen and the press preserve their lineaments from destruction. Shall it be said of an age like the present, that ships were built, and they perished with their outlines and proportions, as the canoes of the savage? Shall future ages be able to learn what were the evolutions of the ship-yard in the early ages of steam, or shall our ships, like the pyramids and mummies of Egypt, go down to posterity in silence, ignorance and conjecture, without a page to define the art that brought them forth? We wonder if some future "*Barnum*" will pay thousands of dollars for the model of a ship in our times, to enrich a museum, as he buys relics of pottery from Pompeii or Herculaneum, or a war-club of a savage who died in New-Zealand! Who can produce a model of Cæsar's boats in which he invaded Britain? All are lost; and even to-day, who can furnish a model of the British gun-boats for the Baltic? They, too, will be lost. What matter? some one will inquire. Matter enough, we say, for it would be interesting, after all the boasting of Britain as a naval power for "a thousand years," to compare the advance in ship-building made on that valorous Isle, since the Roman landed his forces from Gaul. We doubt if equal skill has been displayed by the Briton, in adapting his fleet to the exigencies of the case. To ascertain whether the world has advanced, we must measure it by the past; but what shall we do when the past is *lost?*

As individuals, we may ever improve during life; but our posterity must begin where we did, if general information perishes with the generations which attain it by *practical* experience. Of what benefit to the world, or to a man's children, even, is his hard-earned lessons of wisdom, in science and in

art, if his knowledge and his remains be entombed together? It is only by leaving our marks by the wayside, in printer's ink, that we can do any good beyond the narrow orbit of our labors. And shall we be told, none care to be remembered in the history of the past—that a mechanic gets *paid* for his skill, and cares nothing for posterity and his own name as an artisan? Persons of this mould, indeed, rarely subscribe for, or read magazines, we grant. But it is equally true, that such leave no mark even upon their own age. They quit the world in debt, leaving nothing to mankind for all that mankind has rendered them in their sum of happiness.

We are not forgetful of the all-pervading principle, that *the world provides its wants,* and, consequently, when periodical literature is required in connection with any particular art, science, or interest, among men, it will *pay* to furnish it. On the contrary, it may be well to remember what follows the admission of the above principle, viz., that the *want* always precedes the *provision*; and it is left to the invention and intelligence of mankind, or of an interest or a profession, to discover and supply the wants of the community. That the new field of usefulness, which this Magazine has sought to occupy, was one that justified our appearance before the public in an editorial capacity, is no longer a problem for solution.

The disinterested voice of the commercial press, and the less public, though better-informed tribunals of private interviews with merchants, ship-builders and ship-masters, have all declared in our favor.

Indeed, it would be surprising, if the coach-makers of this country require and support a "*Coach-maker's Magazine,*" as they do, that the Maritime and Naval interests should virtually place their art below that of building "coaches." Railway journals are well supported, and shall navigation be deemed of less consequence than railways? Telegraphing and daguerreotyping are not without special journals devoted to the diffusion of knowledge upon their particular arts, although neither is yet a quarter of a century old. Indeed, one cannot name an art. science or profession, among enterprising and enlightened men, that is not represented by the press. Ship-building alone, with navigation, has stumbled on for years and centuries, with none to do it a favor, either to speak for it, or to listen in its behalf. Ship-builders and navigators, before all others, constituting the projectors of a commercial nation's destiny, have hitherto had no voice in journalism. Shall it be so any longer in the United States? Have we not among the ship-owners, builders and masters, sufficient intelligence and moral power to support a handsome journal, such as its conductors desire to make the NAUTICAL MAGAZINE? Shall it be a matter of reproach to the fraternity, that we lack either the money or the talent to be fairly represented in the public press? No, brethren of the ship-yard and the ship; of whatever capacity, let us have a voice, where discussion can be heard from one shore of the continent to the other—an organ which shall collect and disseminate

all the information in relation to maritime pursuits and interests found to be desirable. Without such a periodical as the NAUTICAL MAGAZINE aims to be, we stand, as a profession and as artisans, in obscurity, behind the scenes of public notice or regard. As a great class who ought to occupy front seats in the universal drama of history, we are unknown. Types are the only monuments of living intellects that reach the public eye at the present day. A maxim of the age may thus be rendered: "*What is not found in print, is not worth finding.*"

It is thus we read the spirit of the times in which we live. We have been bold to test the value of *our idea,* viz., to undertake a publication which should reflect the ship-yard and the ship, the *commerce of the world,* redeeming the interests and the honor of our craft from oblivion. We are practical men, and cannot conceive how an *idea* can have any value, except it be *tried.* We have staked much upon the undertaking, knowing that if it be good for anything it will *pay,* or, at least, promise to pay at a future day; for it is not always that an idea comes just in season. It may be too early or too late. But who is wise enough to time, exactly, untried measures and movements without experiment? We find, however, that while we are too early for some, many have been waiting for years for the appearance of just such a magazine as this. Their words are cheering—they pronounce the national maxim, "go ahead," and give us the hand of patronage. Others have not yet got ready—they require a little "time."

It is, therefore, our conclusion, that we entered the field at an opportune moment. We intend to cultivate it wisely and well, to the extent of our powers. A liberal support will furnish us the encouragement and the means to make this journal as attractive and valuable as the most fastidious can wish. We shall indulge a laudable pride in conducting it in such a manner as to render it worthy of the great class which are to become its readers. We shall be found ever ready and anxious to introduce improvements in its appearance and matter as fast as our strength will permit. It will be perceived that we have enlarged the size of our sheet for the purpose of increasing the size of our page for illustrations, and to afford room for our *new department.*

We contemplate increasing the number of our pages with the wants of the service in which we are engaged, while the price of subscription shall remain unchanged. Our readers are assured that the work cannot be sustained for less, without detracting from its value, by dispensing with necessary original drawings in leading Nautical improvements. Increase of subscribers will enlarge our facilities for perpetually reducing the cost by the increase of matter.

Enjoying the satisfactory encouragement of our first friends in opening our columns for a new class in the NAVY, we hope to command that patronage which is so eminently characteristic of meritorious novelty in the United States.

GRIFFITHS, BATES & CO.

Editors and Proprietors.

SHIP TRICOLOR.

It seldom falls to our lot to be put in possession of so complete a schedule of particulars of any vessel, as that furnished of this ship, built by H. N. Jones, Esq., at Quebec. We have in this instance been put in possession of all the essential details of construction, which will enable the qualified reader to judge of the qualities of the vessel by the services performed; and inasmuch as this builder's vessels bring the highest price in the Liverpool market, it will be interesting to learn the particulars. Her picture represents her as a neat and well-proportioned vessel above water, both in hull and spars, with light quarters, terminating in an elliptic stern, with the cross seam as the base of the stern, raised to the altitude of the archboard; by this method the counter is dispensed with, which is an improvement, both in the model and the strength of the stern. (The senior editor is the author of this improvement, described in his treatise on Ship-Building.) The head terminates in a full figure, backed by the usual mouldings, which together give expression to the entire bow, and without which the best model bears the aspect of a mere hulk. It is the completeness of the adaptation which gives expression; it may in some cases be obtained without carved work or mouldings, while in others no amount would furnish this essential quality.

The following letter from the builder, will speak for itself:—

Quebec, 18*th August*, 1855.

Messrs. Griffiths & Bates:

Dear Sirs—I readily accept your invitation to send you the lines, tables, specifications and draughts, of the new Ship "Tricolor," from here on the 12th inst., bound to Liverpool for sale.

The ship has not as much rise of floor, nor as much length as the "Tudor," which vessel your Mr. Griffiths may well acknowledge as his own. The contour of the "Tudor," however, has been kept in view—and a vessel much more burthensome, more adapted to general purposes—and, still, a swift vessel, has been produced. The construction of the ship has been carried out equally with the "Tudor," but with the additional advantage of having had every stick of her frame sided by a steam saw-mill on the premises, and of having a larger share of compass timber employed in the fore and after bodies of the frame.

The length for tonnage is	189	feet.
" Beam, extreme	38.7	"
" Depth of Hold	22.7	"
Registered tonnage, 1238.75 by the new Act—		
Builders' Mt.	1308 tons.	

The keel is of gray oak, 12 in. below garboard, and sided 15 in.; scarphs 8 feet long, and eight bolts of $1\frac{1}{4}$ copper in each scarph. The floors are hackmatack, sided, and moulded 15 in., with 8 in. rise at 7 feet from keel. The keelson is gray oak, sided 20 in. and moulded 22 in.; the rider keelson is 17 in. square—altogether the keelson is 39 in. deep, and is bolted through keel at every floor with $1\frac{1}{4}$ and $1\frac{3}{8}$ in.

iron bolts, 6 feet 4 in. long, and clinched under the keel. The stem is sided 15 in. and moulded 17 in., with two aprons sided 15 in., and moulded 19 in., all of gray oak. Stern-post sided at heel 15 in., and at wing transom 20 in., for patent rudder to work into; two false posts, inside wing transom, sided 16 in., and moulded 18 in.—all bolted with 1¼ in. iron.

First and second futtocks of oak. The first futtocks are sided 12 in., and moulded 17 in. at bilge. Second futtocks are sided 12 in., and moulded 16 in. The third futtocks and top timbers are of hackmatack—the 3d are sided 12 in., and moulded at centre 11 in. Top timbers sided 10 in., and moulded at gunwale 8 in., running up for staunchions, 9 X 7 at top of rail—planking outside.

Garboard 11 in., and next five strakes taper or graduate to 5 in. on bottom. The garboards are bolted through each other, and clinched every 3 feet, with 1⅛ iron, and up and down in every floor with 1⅛ iron, and clinched on timber inside. All of best rock elm.

Bilge Strakes.—Six strakes of 6½ in., graduated from 5 in. on bottom to 5 in. on side—hackmatack; bends are 7 strakes of 6½ in. graduated; binding strakes 4 of 5½ inches; covering boards 5 in.—all of hackmatack. Bulwarks 2½ in., white pine; main rail 4½ in., of white ash.

Ceiling Inside.—Limber strakes 6½ X 10 in., in two strakes each side, bolted through, and clinched;—flat of bottom 4½ in.; bilge strakes commence at half floor, 6 strakes of 9½ in., bolted through timbers, at every alternate timber, and clinched, graduated from 9½ in. at sixth strake to 5 in. at lower deck clamps. *Lower Deck Clamps.*—Three strakes sided 11 in., and 9 in. graduated; two next strakes graduated to 6½ inches—the upper one doweled on every timber. *Lower Deck Beams.*—Sided 15 in., and moulded 16 in. at centre—at ends, 12½. The knees hackmatack dressed, 9½ in. Lower deck waterways 9½ in. thick, 12 in. broad, bolted into every beam 1¼ in., iron. Second strake 7 in. thick, bolted with 1 inch iron. Upper deck clamps 9 in. thick and 16 in. broad, doweled in every timber, and bolted with 1⅛ in. iron. Second strake 7 in. thick and 12 in. broad. The entire ceiling of the ship, except the upper strake of upper deck clamps, exclusively hackmatack—the exception being gray oak. Upper deck beams sided 11 in. moulded 12 in. at the centre, and at ends 9 in. The knees are sided 7½ inches, and bolted with 1⅛ in. iron.

Pointers forward are placed diagonally, and there are also diagonal ones aft—two pairs at each end, 15 in. square, and bolted at every timber with 1¼ in. copper. There are also three pair of horizontal pointers forward, and breast-hooks—all hackmatack.

The fastening and construction of the ship is altogether from Lloyd's Rules, and has been built under their Special Surveyors at this port. She has, however, four pair of iron diagonal braces, running from gunwale to keel, *inside*—inserted in the timbers, and bolted and clinched. The fore braces are of 4 in. X ⅝ flat iron, and extend abaft the foremast—the after ones extend forward the break of poop.

The ship has a poop 60 feet long and 7 feet high, a large house amidships 50 feet long, and 20 feet broad, 6 ft. 6 in. high, for passengers. Also a large and roomy forecastle, for crew.

The ship has a light, graceful appearance, the poop-rail elliptic. The stem quite oval, and rich moulding running right round to meet the archboard. Four windows in the 'tween decks, over top of archboard, and four above in the poop-cabin, for light and ventilation.

Skylights are conical, 12 ft. and 17 feet long. Also ornamented capstan for poop. The work is well performed, and referring to the spar-plan, I close this detail.

I am, dear Sirs, your humble serv't,

H. N. Jones.

MASTS AND SPARS OF SHIP TRICOLOR.

Rake of Masts—	Foremast	1 inch to a foot
	Mainmast	1 1-8 "
	Mizzenmast	1 1-4 "
Masts on Deck—	Foremast	37 feet.
	Mainmast	65 "
	Mizzenmast	52 "
	Aft to Post	33 "

Length of Foremast, Ext.	78½ feet.	Masthead....13 ft.	diam.	33 in.
Topmast	47 "	8 "	"	17½ "
Topgallant	23 "	0 "	"	10½ "
Royal	16 "	Pole, 6½ "	"	8 "
Mainmast	82½ "	Masthead....13½ "	"	34 "
Topmast	47½ "	8 "	"	17¾ "
Topgallant	24 "	0 "	"	10¾ "
Royal	16 "	Pole, 6¾ "	"	8 "
Mizzenmast	72½ "	Masthead....11 "	"	27½ "
Topmast	39 "	7 "	"	14 "
Topgallant	19½ "	0 "	"	8½ "
Royal	14 "	Pole, 5 "	"	7 "
Bowsprit Out	25 "		diam.	30 "
Jibboom Out	21 "		"	17½ "
Flying Jibboom	18 "	Pole, 2½ feet	"	7½ "
Spanker Boom	47 "	" 2 "	"	12 "
Gaff	30 "	" 5 "	"	9 "

The Fore and Main Masts are built of four pieces, and hoops drifted on every 3 feet.

YARDS.

Fore Yard, cleated	67 feet.	Arm 4 feet.	diameter 19½ in.
Topsail	53¾ "	" 3 "	" 15½ "
Topgallant	39½ "	" 2 "	" 10¼ "
Royal	26 "	" 1½ "	" 7⅓ "
Main Yard, cleated	68 "	" 4 "	" 20 "
Topsail	56 "	" 3 "	" 16 "
Topgallant	40½ "	" 2 "	" 11 "
Royal	27 "	" 1½ "	" 8 "
Crossjack Yard, cleated	52 "	" 3 "	" 15½ "
Topsail	39¾ "	" 2 "	" 11 "
Topgallant	28½ "	" 1½ "	" 7½ "
Royal	21 "	" 1 "	" 6½ "

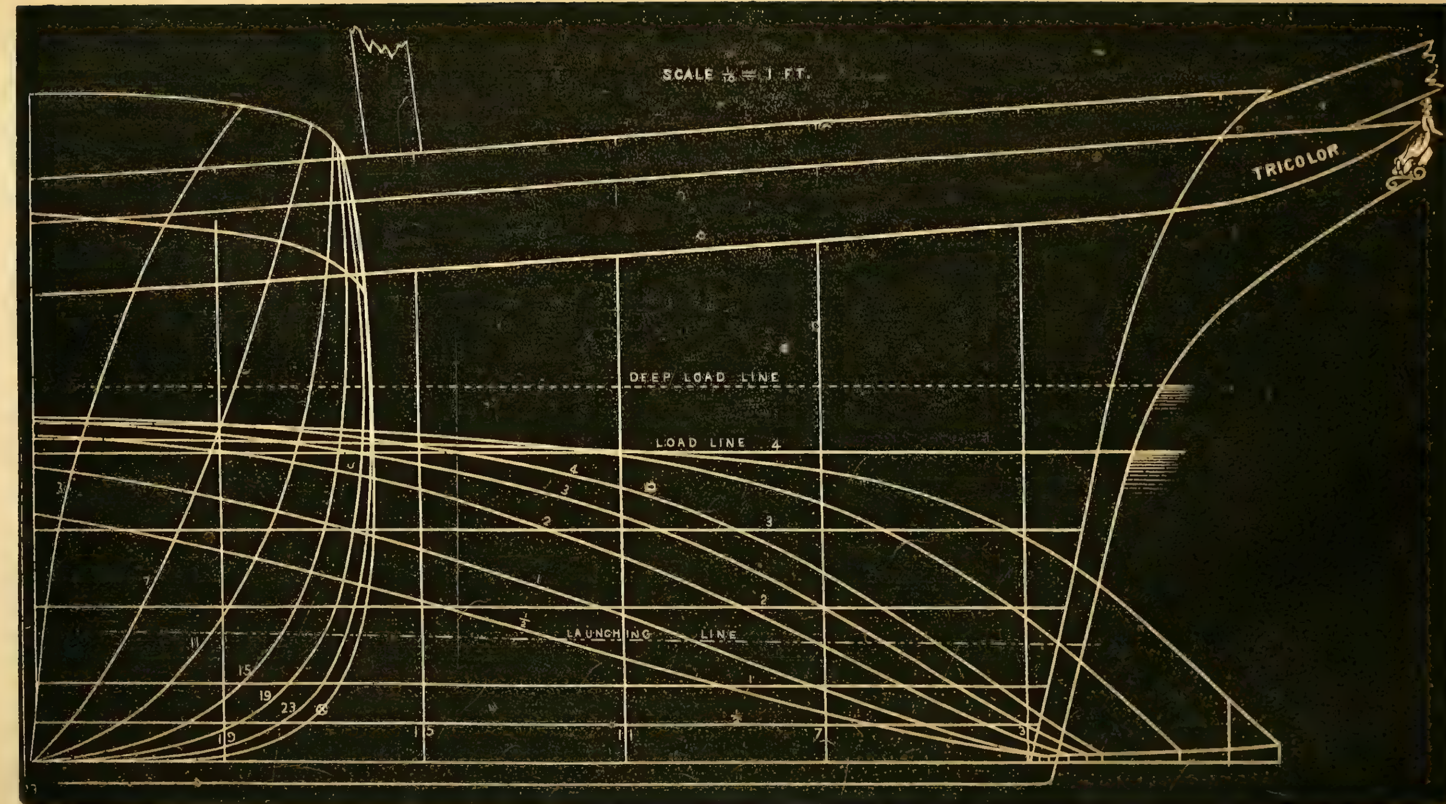
CARGO ON BOARD "TRICOLOR."

Under deck—Oak, 200 Lds. or Tons: Elm, R. Pine, W. Pine, 1,137 do.; Deals, 64 do.; P. Staves, 52 do.; W. I. Staves, 26 do.; Lathwood, 20 do.—Total, 1,499.

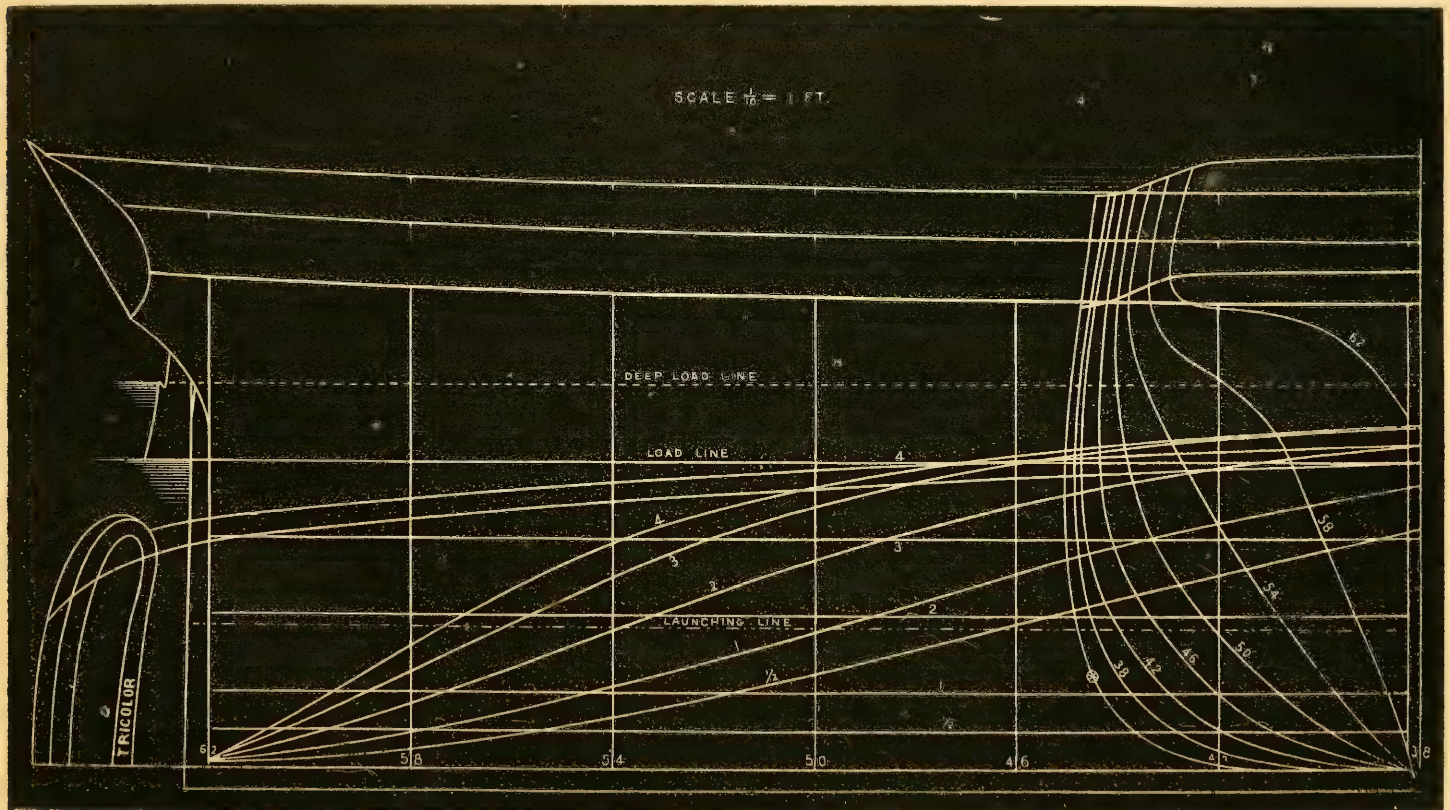
On deck*—W. Pine and Oak 114 Lds.; Deals, Handspikes, and Billets, 66 do.—180. Total, 1,679 Lds.

She had 90 tons of stone ballast, and drew 7 feet 4 inches forward, and 8 ft. 8 in. aft, when launched. She drew 21 ft. 6 in. with cargo on board. Pilotage paid for 21 ft.

* She had a monster piece of oak on deck, three boats on the boat-beams, twenty water-puncheons, and the usual rubbish.



SCALE 1/16 = 1 FT.
TRICOLOR
DEEP LOAD LINE
LOAD LINE
LAUNCHING LINE



SCALE $\frac{1}{16}$ = 1 FT.
DEEP LOAD LINE
LOAD LINE
LAUNCHING LINE
TRICOLOR

THE CLIPPER SHIP NIGHTINGALE, OF BOSTON.

The clipper-ship Nightingale was built in 1851, by Samuel Hanscom, at Portsmouth, for Capt. Miller and others, and designed for exhibition at the World's Fair at London. When she appeared in Boston harbor, however, her symmetrical proportions and outlines attracted the attention of Messrs. Sampson & Tappan, enterprising merchants of that city, and they purchased her for the sum of $——. She did not go to the Great Exhibition, as did the *Yacht America,* but sailed on a voyage to Sydney, N. S. Wales, when she proved one of the very fastest sailers that ever plowed salt water. We have no doubt, that at the date of her construction, the Nightingale was *the swiftest ship* in the world; and even at this date, after so many larger clipper-ships have been built, her performances have seldom or never been excelled. In 1852, on her passage from Shanghae to London, she ran 336 nautical miles in the twenty-four hours; and the distance, 13,726 nautical miles, from Batavia Roads to London, she accomplished in 70 days, being an average speed of 197 nautical miles per day, or 8.17 knots per hour, during a long voyage. In October, 1851, she sailed from Boston for Sydney, and arrived out in 92 days —the shortest passage made at that date. February, 1853, she sailed from Portsmouth, England, to Shanghae, and made the passage in 106 days. On a return voyage from Shanghae to London, February 16, 1855, the *Nightingale* passed Anjier in 17 days, and arrived at London in 91 days, 16 hours.

She has never been beaten on a voyage by any vessel sailing about the same time; on the contrary, in 1852, she beat the British clipper ship *Challenge,* from Shanghae to Deal, *three days,* having sailed but a few days after her English rival.

May 19, 1854, the *Nightingale* sailed from New-York for Melbourne, and accomplished the shortest passage between these two ports ever yet made, viz: in 76 days and 16 hours, notwithstanding she had light, baffling winds on the first part of the voyage, and consequently was 30½ days to the Equator. But from the Equator to Hobson's Bay, the remaining portion of the voyage, the run was made in the unprecedented short space of 45 days; her speed during this run frequently reached 14 and 16 knots. We shall give the abstract of her Log on this voyage, as returned to Lieutenant Maury, at Washington. It will be found one of the finest examples of modern sailing anywhere extant; and we take pleasure in introducing her commander, Captain Mather, to our readers, not only in the capacity of an excellent navigator, but as a most able and accomplished ship-master—*the* man for the *ship.*

The dimensions of the *Nightingale* are as follows:—Length on deck, 178 feet; breadth of beam, 36 feet; tonnage, 1,066 tons; depth of hold, 20 feet.

Her *deadrise* is very great, and she has an outstanding keel of 2½ feet. When in sailing trim, it will be seen she has a very large amount of *lateral* resistance. Her aft end is very handsomely shaped, while we consider the bow, below light water draught, capable of improvement; it is a little too full near the stem, consequent upon an insufficient amount of *hollow*, so called, in the water lines. The resistance on this vessel is greater at this point than at any other of equal area on the whole bottom. The *Nightingale* will require to be trimmed by the stern, to adjust her displacement, for the best sailing condition.

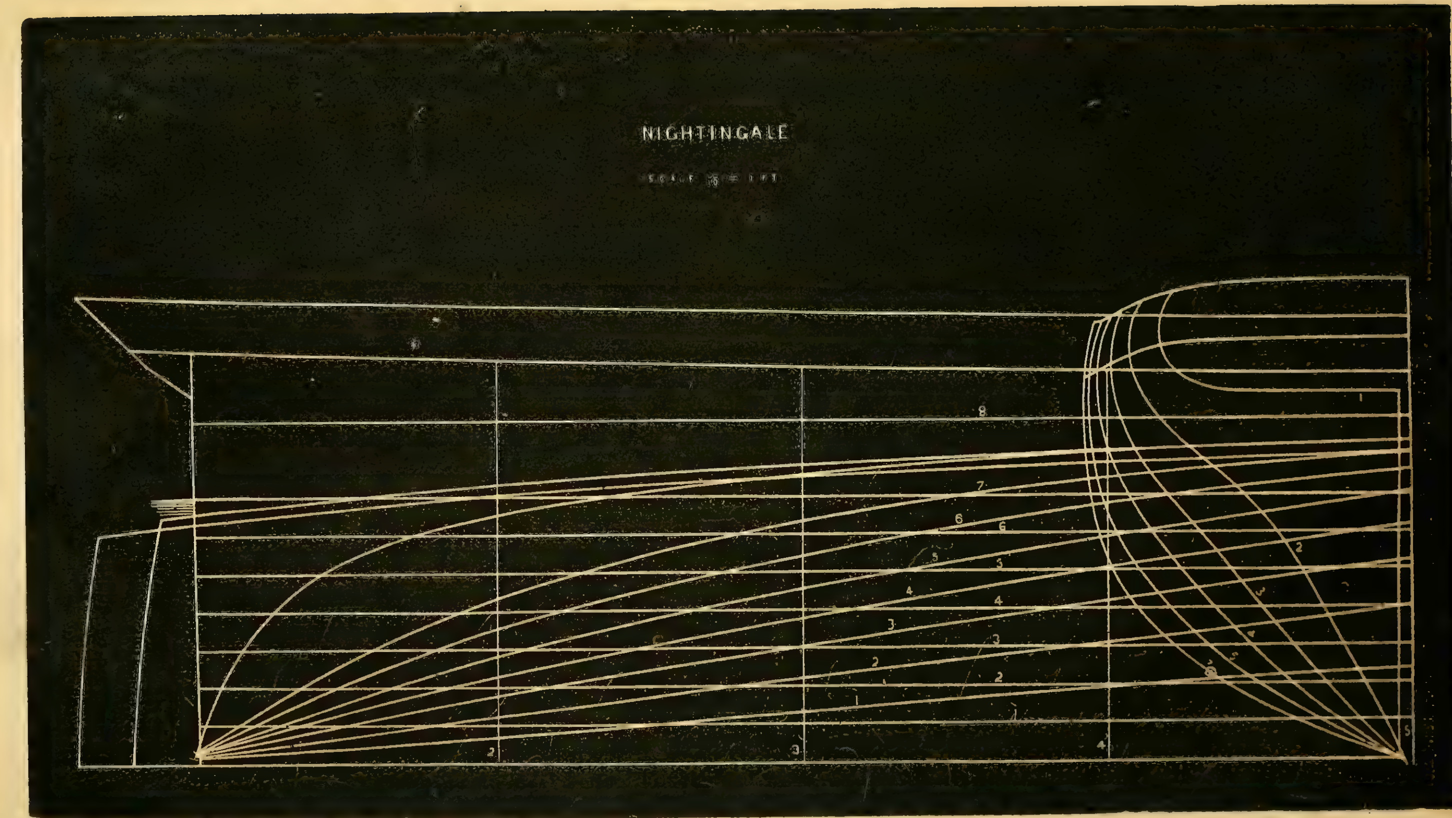
She carries about 1,000 tons of measurement goods, and is celebrated for her fine passages. See page 372, vol. 1, NAUTICAL MAGAZINE, for a lithograph print, showing her spars, as she appeared off the Battery, in New-York harbor. She is tauntly sparred, with much rake to the masts, and has a very large proportion of sail for a vessel of her displacement.

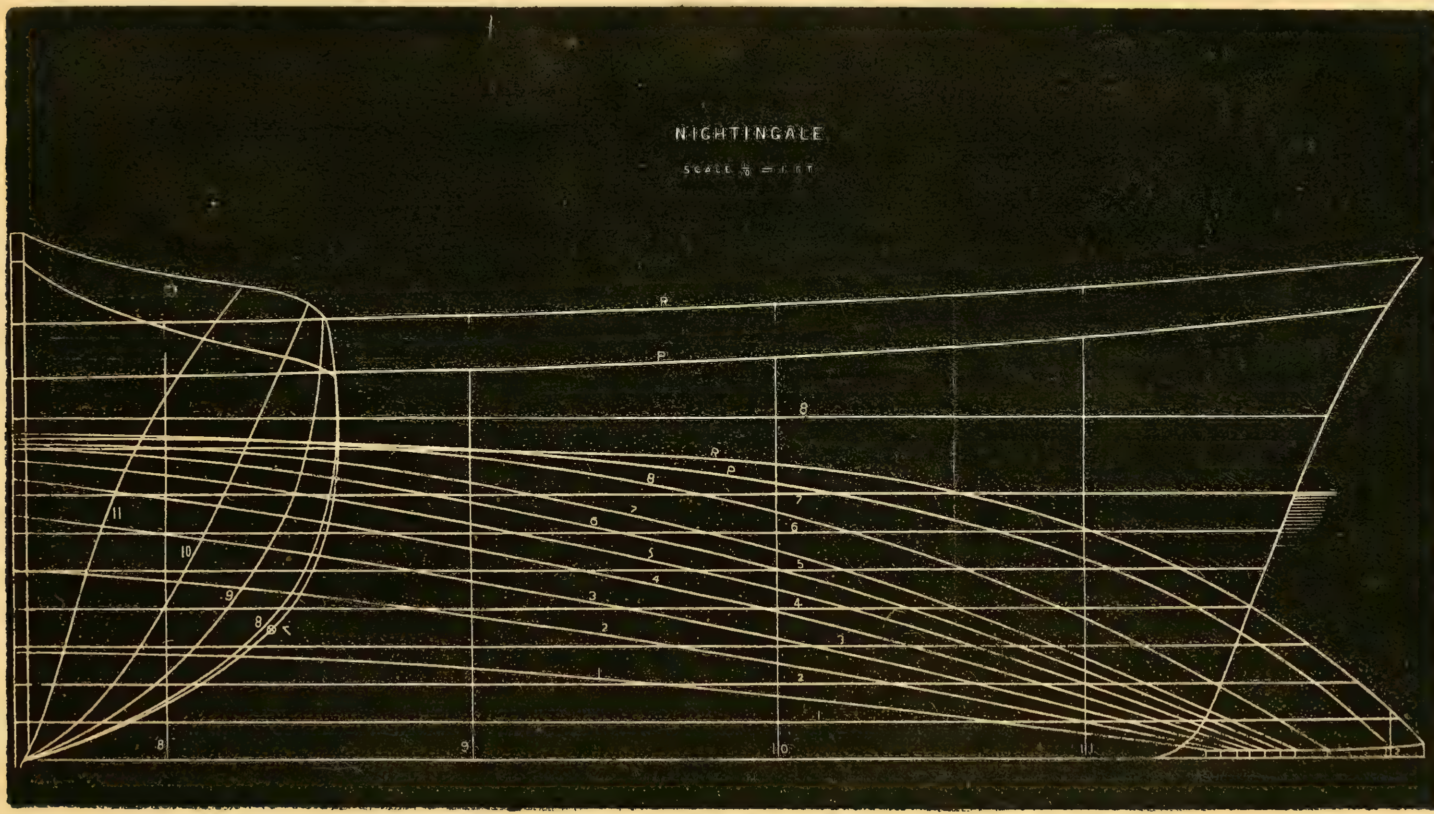
It will not be out of place to remark, that she is regarded by her friends as *the* fastest and finest ship throughout the fleets of *the world.* Let it not be thought, however, that her great amount of *deadrise* has necessarily secured her a claim to superiority as a sailer, although it may be true that many of the finest performers on the ocean have been constructed upon this idea. It is equally true, that flat-bottomed ships, having fuller ends, and designed with a view to *profit* as well as speed, very often approximate the best work of the sharp-bottomed clipper. It is quite true, if too great a depth of hold, and draught of water be chosen, a sharper model may be obtained by giving larger *deadrise* than by giving very little; but here its advantage ends, being nothing more than a compensation in *shape*, at expense of cargo, for ill-chosen dimensions. These remarks are general, and not made because *we* have been accustomed to modelling *flat* vessels, for we have now to acknowledge constructing several with *too much deadrise*, though not exceeding 15 degrees from a horizontal line.

The *Nightingale's* log will be found in the Nautical Department.

[From the Albany Argus, Aug. 14.]

A NEW SHELL.—We see it stated that Professor Homer Anderson, late Professor of Natural Science at Cinton, in this State, has invented a new bomb-shell of terrible power. Professor Anderson claims that Sebastopol would fall before it; that it will wrap in flames any fortification of wood or stone, or indeed any city however strongly fortified. A recent trial appears to have been very successful. One of the shells was thrown from a six pounder, by way of experiment, and falling upon some rocks, corruscations of light arose some fifty feet in the air emanating from materials under the most intense ignition. It rained very hard, but notwithstanding the rain it burned on the rocks twenty-five minutes, and in various places on the grass, which was exceedingly wet. Cheers upon cheers burst forth from the gazers when they saw the flames bursting forth on the rocks, covering an area of twenty square feet, before the sound of the cannon reached their ears, and that, too, with a miniature ball, whose weight when charged did not exceed nine pounds. Professor Anderson intends to take his invention to Europe and sell it to the Allies, if he can.


NIGHTINGALE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THE JAPAN AND CHINA PACKET PROPELLER ANTELOPE.

The establishment of commercial relations with Japan, has furnished a new field for American enterprise in constructing vessels adapted to the trade between that and other countries. An original, and skilfully designed vessel, fitted out at a liberal expenditure, and embracing almost all the popular improvements of the day, has been built in East Boston, Mass., by Samuel Hall, for parties in China, for which she sailed on the 19th day of July last. This beautiful pioneer packet has been named the Antelope; she registers 415 tons, and is well furnished with sail and steaming power.

The credit of her design and superintendence is due to Capt. R. B. Forbes, of Boston, and abundantly evinces his excellent taste and judgment in every point of utility, convenience, and facility which has been skilfully combined, to stamp the Antelope as a production worthy of the nautical science of the age. And we would say, that although costing, in her construction, equipment, and experimental trials, more than $50,000, not *one* dollar has been expended in superfluous glitter and ill-contrived ornaments, but nothing has been withheld, through a mistaken economy, that could properly and judiciously have been invested in making her *what she ought to be.*

She carries a small armament of an efficient description, as a defence against the pirates on the China coast, consisting of an 8-inch shell gun, of navy pattern, weighing 6,340 lbs., fitted on a slide carriage, to work in a large gangway port on either side. This gun would take a 64 pound shot, but is only provided with shells and hollow shot. On the bow she mounts a 32 pound shell gun, weighing 3,318 pounds, fitted expressly to pivot at the tail of the carriage; and on the quarter-deck is another gun of the same weight and calibre, pivoting in the same way. These guns and carriages were designed by Lieut. Dahlgreen, of the U. S. Navy, whose fame is well known for his boat guns and carriages. The cabin is also well stocked with small arms, which may be used to command the deck, through a port in the front of the cabin, in a case of invasion.

For her model, the Antelope is jointly indebted to Mr. Samuel Hall, and S. H. Pook, of Boston, and is a fine specimen of their skill. We invite our readers to compare its points with those of other models of propellers, which we shall furnish in this volume of the Magazine. Through the kindness of Captain Forbes and Mr. Pook we have been furnished with the mould-loft tables of the Antelope, from which the accompanying draught is drawn. Her dimensions are as follows:

Length on deck, 155 feet; on the keel, 147 feet; extreme breadth, 27½ feet; depth of hold, 10½ feet. Deadrise at half floors, 10 inches. In regard to her lines, Mr. Pook writes us as follows:—"The model was altered somewhat from the original design, being made *one* foot deeper, and ten feet longer,

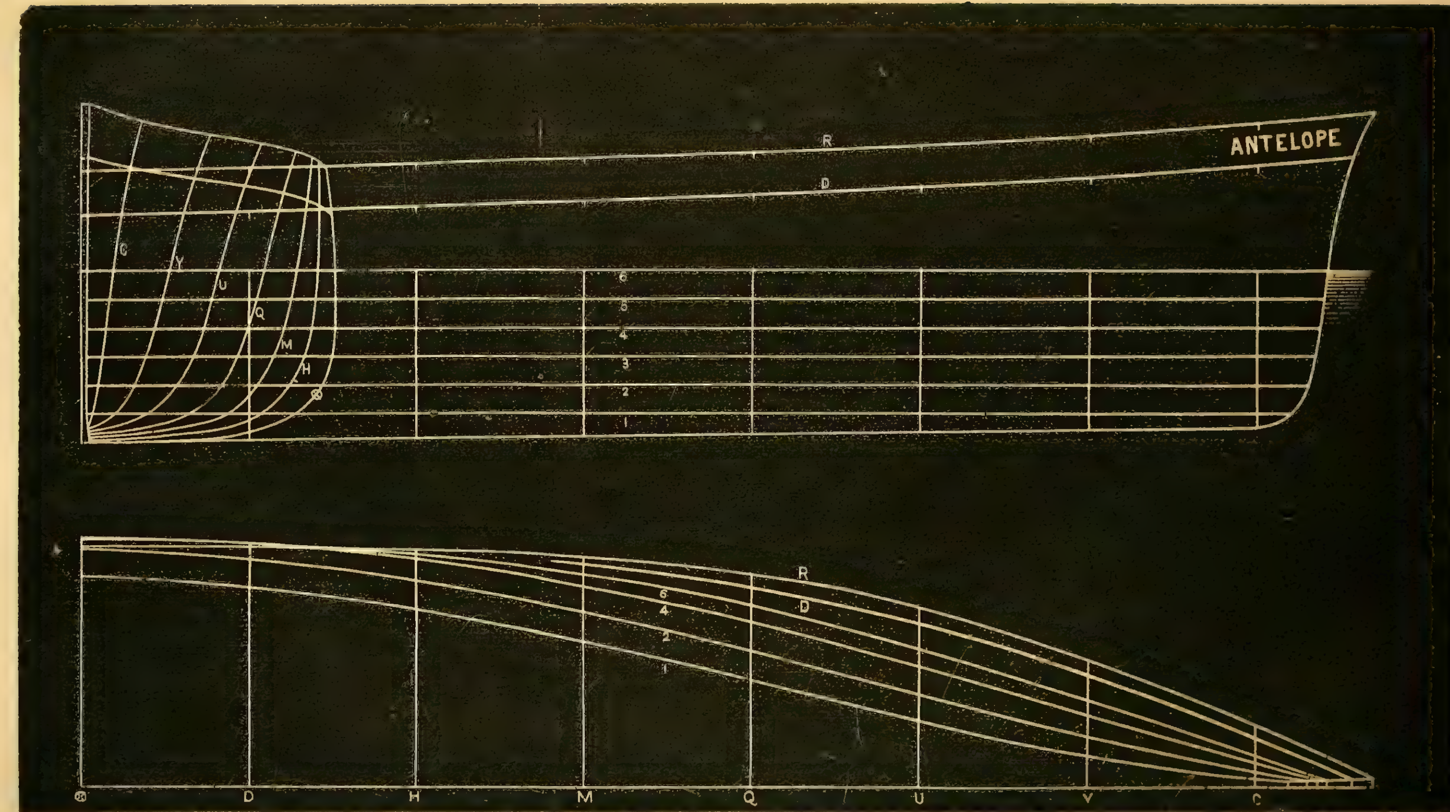
and having a drag line of two feet put on to the bottom, which made her somewhat different from Mr. Hall's original design; but, in my opinion, the lines are still too full aft to get the best result from her propeller, and her midship section entirely too square for speed." He adds, "she is constructed as usual for vessels of her class, being stronger only, by extra fastening. Mr. Pook was called to superintend her building, inasmuch as the contractor was absent from Boston." Her bulwarks are 4 feet above the deck, surmounted by a monkey-rail of 14 inches, and she has a topgallant forecastle the height of the main rail and 25 feet long, a house abaft the foremast 18 by 11, and 6½ feet high, a half poop deck, 32 feet long, with projecting rooms on each side for engineers, and the engine hatch flush with poop-deck, containing entrance to the engine room. The forecastle, the first of the kind, is sunk about three feet below the main deck; it is ventilated and lighted by two screw lights in the bow, and two ports in the after part of it are also fitted with screw lights, for air and light when the ports are closed. There are twelve berths in it and a table, and it is tastefully painted and grained.

A comfortable forecastle bespeaks the intelligence and humanity of the owner for the well-being of the sailor, and secures a willing discharge of duty, and hence is always a paying investment.

In the deck-house there are four berths, for the gunner, carpenter, and two boys. In separate rooms, there are also two berths for cook and steward, and two for the firemen, besides a mess-room and cooking apartment. On the main hatch is a small house, with two berths in it, for an hospital, if required.

The hawse pipes pass through above the forecastle deck, instead of through below it in the usual manner, and the chains do not, therefore, render the forecastle wet, dirty, and uncomfortable. The anchors are weighed from the topgallant forecastle deck.

The cabin, like the forecastle, is sunk about three feet below the main deck. There is nothing peculiar about its appearance, except its simplicity. It is entered in front on the port side; on the starboard side is the captain's room, having a side-light, a port in the bulkhead, and containing the small arms, carbines, cutlasses, &c.; between the captain's room and the gangway, amidships, is the pantry, with the mizzenmast stepped down through it; and on the larboard side is found the mate's room. Abaft these rooms is situated the main cabin, occupying the entire breadth of the vessel, in an octagonal form, having the corners cut off to supply length for berths in the rooms forward and abaft of it. The after cabin contains two berths and a water-closet. The tiller traverses here beneath the deck, in order to leave all clear for handling the pivot-gun on the poop-deck. The wheel, however, is placed on this deck forward of the gun, and the binnacle is formed in the skylight. The compass is one of Sir W. S. Harris's, suspended by India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Rubber, and has been fully tested in many vessels, fitted out by Captain Forbes. This compass costs 30 to 35 dollars to import it, but when it is once on board, it can be depended on with far greater reliance than those in common use. What may not depend on a *good* compass, that a sum of $20 might not secure ?

The timber, scantling, and construction are as follows:—The keel is in two depths, being sided 12 inches, and moulded 28, with 10 feet scarphs, and is bolted with copper. The floors are sided 10 inches, moulded 12, and bolted alternately through the keel, and through the keelson and the keel, with one inch yellow metal. Moulding edges of frames two feet apart. The stem and stern-post side 12 inches each, the former being 12 inches at the head and 15 inches at the foot, moulded, while the latter is moulded 19 inches at head and keel. The apron and deadwood are bolted with yellow metal up to 14 feet draught. The lower log of keel, 12 by 14 inches, projects six feet beyond the inner stern-post, and into its extreme is stepped the outer stern-post, which is of live oak. The opening between the posts for the play of screw propeller is 4½ feet, fore and aft, and 9 feet in a vertical direction. These posts are secured as usual, by two composition metal knees, each 7 inches wide and 1 inch thick, let into each side of the posts and keel, in the same manner as the usual dovetails, and are bolted through all. These knees or braces weigh 250 lbs. each. Above the propeller the same manner of securing the two posts of the fore and aft piece is adopted.

The main keelson is of pitch pine, sided 15 inches, and moulded 14. The bilge or boiler keelsons are of the same size, placed 7 feet outside of the main, and extend from the stern to midships.

The propeller shaft is worked through an oak rider, 19 inches square, layed upon the keelson, over which the angle is filled in with deadwood, quite to the head of the stern-post. The ceiling is of hard pine, three inches thick on the floor ; the bilge is strengthened by 2 strakes of 6 by 14 inches, and 4 strakes of 5 by 14 inches, scarphed and square bolted. The remainder of the ceiling to the deck is all of the same thickness, 4½ inches by 12, square bolted. She has 5 hooks and points forward, through bolted. The beams are sided 14, and moulded 10 inches, except two in wake of the large gun amidships, which are 14 inches square. Hanging-knees are fitted under all the beams, having 3 feet 4 inch bodies, and 4½ feet arms, sided from 8 to 10 inches, and moulded from 16 to 18 inches in the throats. The berth knees are scarphed together. Her water-ways are 8 by 12 inches, with one strake of 4 inches inside. The deck-plank is 3 inches thick—the planksheer is 4½ by 13 inches. All the spikes and bolts about the decks are galvanized.

Her garboards are white oak, 4 inches thick by 14 wide, let into the keel and bolted through it and the timbers ; the bottom plank is pitch pine, 3 inches thick, the wales of white oak, 4 by 7 inches, flush to the covering-

board, the whole square fastened with treenails driven through and wedged. She is butt-bolted with copper, and sheathed with yellow metal up to ten feet forward and 12 feet aft. Outside she is painted black, and inside buff color. In line with the after part of the forecastle she has a water-tight bulkhead, which extends from the skin to the deck, so that if a hole were stove in her bow, she would float without danger. Before the engine-room there is another double bulkhead, filled in with paddy to keep heat from the cargo.

Her bed-plate is of cast iron, in one piece, and her engine-rooms and coal-bunkers are entirely ceiled with or made of iron, as a guard against accident by fire. Her motive power consists of two engines, direct action, with cylinders of 30 inches diameter, and 26 inches stroke, placed vertically over the shaft, one before the other. The cranks are of wrought iron, and the shaft is 30 feet long, in two parts, and 9 inches in diameter, with two bearings inside of the stern-post.

She has two boilers, each 7 feet in diameter, and 24 feet long, with furnaces adapted for either hard or soft coal. Her air-pump beams are made of wrought iron, and her engines are on the low pressure principle. The coal-bins are in the wings of the boilers, and have seventy-five tons capacity.

She is provided with a Griffith three-bladed propeller, of 9 feet diameter and 19 feet pitch; and a true screw also, of the same diameter, pitch, and number of blades. The Griffith propeller is an English invention, and has been tried with success in England, under the superintendence of the Admiralty.

Captain Forbes, however, was determined to test its comparative merits with the "true screw" in common use, for himself. "One trial of the Griffith propeller was made under disadvantageous circumstances of wind and weather, and like most first trial trips was not very satisfactory, owing to foaming of the boilers, and to other causes apart from the propeller and engines. On the second trial it gave good results; with about 58 revolutions and 17 lbs. steam only, the vessel made 9 and $9\frac{1}{2}$ knots (not statute miles), with some help from fore and aft sails.

One trial was made with the "true screw," during which the steam carried averaged nearly 10 lbs. more than with the other propeller, and gave 60 to 62 revolutions, and as a natural result, a mile or more greater speed than on the previous trial.

It must be borne in mind, however, that the "true screw" has about ten per cent. more surface than the Griffith propeller, and if that surface is judiciously placed, and *pitched* for propulsion, it ought to produce more speed than the other.

The consumption of fuel at 27 lbs. must also be greater than at 17 pounds steam pressure, The general result, so far as could be judged of by experiments made without weighing coal, and without scientific examinations into the

surfaces of the propeller's propulsion, without similarity in the tide on both occasions, and without trying a different pitch or angle with the Griffith propeller, amounts to this:

The Griffith propeller propels as fast, to say the least, as the other, with the same pressure of steam, and ten per cent. more turns. It causes less shaking or vibration to the vessel; it does not impede the sailing when locked or stopped as much as the other; the pitch or angle of the blades can be easily changed by getting at the hub, and a spare blade can be easily carried, to supply at short notice a broken one—and this is an accident often occurring to propellers. Against these manifest and very important advantages, it must be borne in mind, that more revolutions use more steam, and make wear on the engines and on the bearings.

The blades of this propeller, instead of being larger towards the periphery, as usual, are largest near the hub, and the hub itself is a globe of some two feet in diameter.

After the trial, Captain Forbes was perfectly satisfied that the Griffith propeller, if properly made, will do as well if not better than the ordinary "true screw." The increased expense of making it, and expense of patent fee, must, however, be drawbacks of a serious nature, unless the advantages claimed for it are fully realized.

The Antelope's shaft is contrived so as to uncouple and allow the propeller to revolve by the headway of the vessel, under canvas. The steam, though nearly enough for a full power propeller, is to be used mostly as auxiliary to the sails."

The Antelope is supplied with a steam-pump, besides which, she has two 7-inch French pumps, that will elevate coal or gravel, of small size, with a stream of water; and in the forward hold compartment there are means to flood the magazine, or shell-room located there, from the sea, and to expel the water when in; and, by a force pump and hose, she can take water from the sea and throw it to the mast-head, if required. Attached to the steam-pump is a hose 50 feet long, to be used for washing decks, or to put out fire; and besides all this in the hydraulic line, she can throw *hot water from her boilers* to a distance of one hundred yards from her side. Her boiler surface is sufficient to steam 6 knots with one boiler only in use, and 9 or 10 knots with 30 lbs. on both boilers, with a natural draft. The nuisance of cinders, sparks, and smoke, is almost entirely avoided on this vessel. Her machinery was furnished by Mr. Otis Tufts, of the East Boston Steam Engine Company.

The ANTELOPE is rigged on three masts, being square-rigged on the foremast, and fore-and-aft rigged on the main and mizzenmasts. This is a new rig which is fast gaining popularity, and is variously denominated, as "barque," "demi-barque," "three-masted schooner, brig-rigged, &c." Inasmuch as it has been proposed to denominate three-masted schooners, TERNS,

meaning threefold, we suggest that this rig be called brigan*tern*, as the combination of brig and schooner rig on *two* masts is now named brigan*tine*. When combined on *three* masts, let it be called *Brigantern ;* then we shall avoid a confusion with the old legitimate rig of "barque." The rig of the foremast in this case, however, is between a brig and topsail-schooner.

Captain Forbes has fitted the foremast with his rig, with the topmast fidded before the mast-head; yet the arrangement is such that this mast can be housed without preventing the use of the topsail. She has a square foresail for moderate weather. Four staysails are carried forward, namely, fore-staysail, cap-staysail, jib, and flying-jib. On her main is carried a mainsail and gaff-topsail, and two staysails. One of the latter is carried on a shifting mainstay, and designed for a storm staysail, to set when the fore-spencer is not used. The mizzenmast carries a hoisting-spanker and gaff-topsail. The masts and spars are proportioned as follows:—Bowsprit, of hard pine, 17 feet outboard, diameter, 19 inches; jibboom, 17 feet outside of cap; flying jibboom, 13 feet; pole, 3 feet; extreme length, 48 feet.

Foremast, 66 feet; head, 16 feet; diameter, 23 inches; topmast, topgallant, royal and skysail, all in one, 50 feet long. Fore yard, 56, arm, 4 feet; topsail yard, 46, arm, 4 feet; topgallant, 36, arm, 3 feet; royal, 26, arm, 1½ feet; skysail, 20, arm, 1 foot. Mainmast, 80 feet; head, 8 feet; diameter, 23 inches; main boom, 38 feet, and gaff, 28 feet. Mizzenmast, 70 feet, stepping at cabin floor; head, 6 feet; diameter, 17½ inches; boom, 36, and gaff, 21 feet.

The ANTELOPE works admirably under steam or canvas. She has Capt. Forbes' patented improvement on the lightning conductor of Sir W. S. Harris, on the fore and mainmasts. This conductor is let into the masts until it approaches the eyes of the lower mast rigging, when it branches off by tubes or sockets to the outside of the vessel, and is connected with the copper on the bottom. She carries a complement of 21 persons, all told, viz:—captain, 2 engineers, 2 firemen, gunner, carpenter, cook, steward, 2 mates, 2 landsmen, and 8 seamen. She is provided with two metallic life-boats, having the end chambers built separate from the boat, and removable at pleasure. One was built by the Francis Company, and the other by Louis Raymond, New-York. The latter has side-tanks and delivery-valves for self-bailing, is of galvanized iron, and superior to Francis' metallic boat, for the reason that the iron is of uniform thickness, and is, consequently, more durable, inasmuch as the corrugations in the Francis' boats are thinner than other parts of the sheet, and yet the wear is greatest on the corrugated parts. The ship's boat is built of cedar, with great beam and buoyancy.

If the Navy Department of the United States were in possession of a few such vessels, instead of cumbrous ships, that are a scare-crow only when the free-booter is caught napping, or ranged alongside, because not capable of


ANTELOPE.

Lithographed expressly for the Nautical Magazine

J. H. Bufford's Lith 260 Washington St Boston.

From a Painting by F. H. Lane.

STEAM DEMI BARK ANTELOPE, 615 Tons.

overtaking anything, or pursuing it into shallow waters, the pirates on the China and East India coasts might soon be driven from the sea, and thorough protection be secured to our trade, which is growing so fast in that part of the world. Indeed, the necessity for maintaining an expensive armament on board our merchant vessels is due mainly to the want of suitable protection on the part of commercial governments against the free-booters of the ocean. We propose that those governments contract the *job* to rid the China and East India coasts of pirates, in order that it may be taken hold of by men who will push the operation to a speedy and profitable conclusion.

PROPELLER PORTSMOUTH, OF BUFFALO.

Of the many screw-vessels that navigate the interior lakes, the propeller *Portsmouth* is not the least worthy of a place in these pages. Although built for a freighting vessel, and not designed for speed to any great extent, yet, in performance, she will compare favorably with any screw-vessel built at the same time in this country. The *Portsmouth* was built in 1852, by Messrs. Bidwell & Banta, of Buffalo; machinery by the "Shepherd Iron Works." We furnish the mould-loft tables, from which her draft may be projected. She is built for an equal draught of water at the ends, and it will be seen that, although drawing only about 8 feet, when loaded, her propeller is 13 feet diameter, with 17 feet pitch, or 4 feet greater diameter than the propeller of the *Antelope*, described in a preceding article, with 2 feet less pitch. The *Portsmouth* is 525 tons, carries a cargo of 575 tons, and runs 10 miles per hour. Her engine is high-pressure, non-condensing; cylinder standing vertically over the shaft; 42 inches stroke, and 27 inches diameter. Average number of revolutions, 65 per minute. The engine, screw, and boiler, weigh about 30 tons. She has no help from sails, they being long ago discarded on screw vessels on the lakes; a foremast being the only mast that is carried.

Frame.	Heights of deck line.	Half brdths. 1st W.L.	2nd W.L.	3d. W. L.	4th W.L.	5th W.L.	6th W.L.	Deck.
Stem	15.17	....	...	....	....	....	....	
M, or 12	14.92	....	.58	.92	1.17	1.42	1.67	2.46
K	....	....	....	....	....	....	....	
H, or 8	14.29	1.75	2.07	3.39	4.00	4.59	5.10	6.54
D, or 4	13.75	3.69	5.09	6.00	6.79	7.39	7.96	9.41
Y	13.17	5.92	7.42	8.33	9.08	9.62	10.10	11.21
U	12.66	7.89	9.41	10.21	10.83	11.25	11.64	12.39
Q	12.25	9.41	10.83	11.57	12.08	12.42	12.70	13.17
M	11.92	10.58	11.83	12.42	12.87	13.12	13.29	13.62
H	11.66	11.32	12.46	13.02	13.33	13.05	13.70	13.87
D	11.42	11.74	12.87	13.33	13.60	13.75	13.83	14.00

Frame.	Heights of deck line.	Half brdths. 1st W.L.	2nd W.L.	3d W.L.	4th W.L.	5th W.L.	6th W.L.	Deck.
Dead flat	11.29	11.96	13.14	13.54	13.70	13.79	13.85	14.04
4	11.25	11.92	12.92	13.42	13.66	13.79	13.81	13.92
8	11 29	11.73	12.73	13.25	13.50	13.59	13.66	13.76
12	11.38	11.17	12.33	12.92	13.29	13.39	13.46	13.53
16	11.55	10.37	11.81	12.54	12.93	13.17	13.21	13.29
20	11.77	9.21	10.11	11.11	12.48	12.77	12.92	13.00
24	12.17	7.64	9.70	11.00	11.87	12.27	12.50	12.58
28	12.52	5.42	7.75	9.58	10 83	11.02	12.04	12.17
32	12.89	3.08	4.96	6.87	8.77	10.23	11.25	11.70
36	13.34	1.33	2.07	3.04	4.58	6.68	9.25	11.19
38		.79	.98	1.33	1.84	2.87	6.66	10.85
40	13.87	....	....	....	....	....	...	10.58

Post, forward of frame 40, 1 foot 9 inches. Stern at deck, aft of 40, 4 inches. Stem at base, 6 inches aft of K, or 10. Rake of stem, from frame M, on 1st W.L., 10 inches; on 2d W.L., 2 feet; on 3d W.L., 2 feet 9 inches; on 4th W.L., 1 foot 3½ inches; on 6th W.L., 3 feet 7 inches; same from thence up: crosses M 2 feet 3 inches above base; crosses K 1 inch above base. Depth of keel, 10 inches below base. Water lines 18 inches apart. Screw, 13 feet. Room and space, 27 inches. Centre of engine, 1 foot 10 inches; aft of frame, 32 feet. Post, square from base 9 feet 10 inches up. Centre of shaft, 7 feet 6 inches above base.

KEELS OF VESSELS.

It has been our purpose to give a dissertation on nautical construction in all its variety and detail, in wooden vessels, in the Nautical Magazine, for the benefit of all who may be interested in the manner of constructing vessels, and to enable such as are incompetent, to give a reason, and may desire to do so, for any mode of construction they may think fit to adopt. In order that this may be accomplished systematically, we shall begin at the keel and follow in the regular order of construction. The keel of a vessel, being the base of the fabric, is generally regarded as the exponent of that service to which the vessel is to be adapted, and, as a consequence, we see it proportionately long or large, shallow or deep. The keel is the most prominent part of the vessel, while in process of construction, and not the less so during her trackless evolutions in her destined element. The keel, too, like the sole of a shoe, is the place for measurement of length, with many merchants as well as builders; hence, we find that much significance is given to the keel of vessels. The mind not unfrequently comes to a non-erasible conclusion in reference to the character of the vessel, from only having seen the keel. The kind or quality of timber usually selected for keels depends much upon the growth in the section of country in which the vessel is built. Hence we find, in the Eastern States, rock and other kinds of maple are used; also beach, birch, as well as white and red oak, the latter of which, when found on high land, is considered very nearly, if not quite as good, as white oak. Oak,

however, very generally has the preference in all parts of the country, for medium sized as well as for large vessels.

Elm is regarded as good timber for keels, so, also, is sweet gum for small vessels. Sweet gum, it is said, has this peculiar feature, that it preserves iron fastening, though submerged in salt water; and iron bolts driven in a *sweet gum* keel, are said to be kept not only free from rust, but are bright when taken out. We have used this kind of timber for keels with iron fastning where it is grown, in Virginia, but our experience is not sufficiently extensive to enable us to speak with certainty as to the extent of this qualifying influence; the timber is about as hard as elm, and quite as difficult to split; the heart is red and the sap white. The keel of all vessels, of any considerable size, must, of necessity, be made of several lengths, inasmuch as the trees of the forest are too short, and it must be apparent to every mechanical mind, that there must be a loss of strength at the place where the several lengths are united; hence it becomes quite important that the amount of strength lost should be actually known, that this weakness may be provided against. There is also a loss of strength consequent upon this combination of lengths. The manner of uniting the several lengths, is by lapping or scarphing them together, and in connection with a diagram showing the per centage of remaining strength at the scarphs, we may add, that although we find it necessary to cut nibs or square ends of some consistency to scarphs, whether of keel or keelson, yet the disadvantages of cutting those nibs, will be apparent from the following fact: that a log of 12 inches deep by 12 inches wide, scarphed say 8 feet long, banded together without nibs, has the same amount of strength as another 12 by 18 inches deep, with 8 ft. scarph and 3 inch nibs (the usual size.) Thus we discover that one-third of the strength is lost by the nibs or ends of the scarphs, while in the scarph itself another portion is lost, as we shall discover by the diagram. An attempt is sometimes made to counteract this weakening influence of the scarphs, by making a keel in two depths. This, however, is not assigned as a reason, by all who adopt it. An increase of lateral resistance to the vessel is often given as the cause, but the difficulty is not removed by adding another depth to the keel. The same discrepancy exists in the second course or depth that did in the first, inasmuch as the weight is increased in proportion to the mass of material, while the strength is equal only to about the one-half of the bulk. There is, however, no escape from this, while wooden keels are used in vessels. It may, however, be remedied effectually in keelsons by making them of iron, which is much lighter as well as stronger, and much less bulky. The form of keels are usually straight, or with a small amount of sag or round to the bottom in its connection with those parts forming the termination or end of the vessel; it has been the custom to connect with a branching part formed of a limb or root of the tree of which the terminus is made. We have sometimes seen this root or branch, form-

ing the scarph to the keel, lapping below or outside of the keel forward; but this plan has only been adopted when the bow was designed to have a large amount of overhang, as was formerly the custom on the shores of Chesapeake Bay. It was not, however, the custom, until within the last ten or fifteen years, to furnish the stern-post with a similar projecting scarph, unless the vessel was a very large ship, and in such cases this was not an invariable rule. There is no established arbitrary rule, for the proportion in either the siding or moulding size in the United States. The *Lloyd's Register* of British and Foreign Shipping, regulate their dimensions of keels in proportion to the tonnage, commencing at 50 tons, and terminating at 1350 tons, and is as follows, for minimum size, being the same both for depth and siding size:

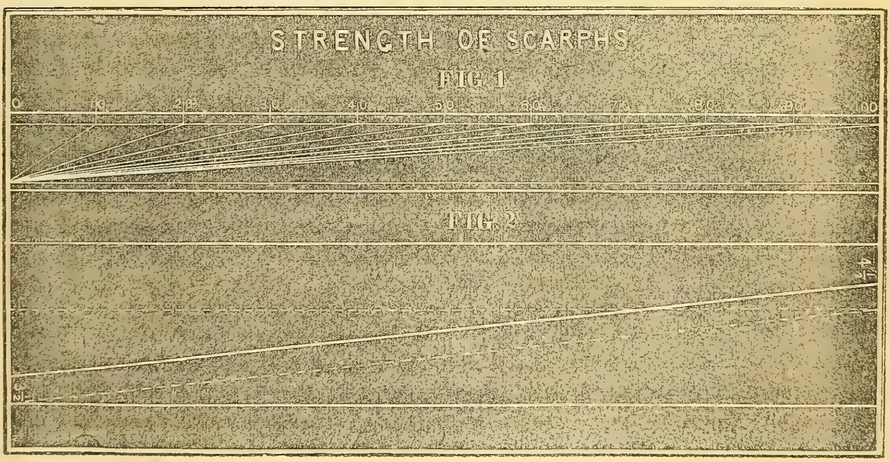
Tons.	Inches.	Number of bolts in scarph.	Size of bolts in scarph.	Tons.	Inches.	Number of bolts in scarph.	Size of bolts in scarph.
For 50	8	0	0	For 650	$14\frac{1}{2}$	8	0
" 100	9	0	0	" 700	$14\frac{1}{2}$	8	1 3-16
" 150	10	6	$0\frac{3}{4}$	" 750	$14\frac{3}{4}$	8	0
" 200	$10\frac{3}{4}$	7	$0\frac{7}{8}$	" 800	$14\frac{3}{4}$	8	0
" 250	$11\frac{1}{4}$	7	0 15-16	" 850	15	8	0
" 300	$11\frac{3}{4}$	7	1	" 900	15	8	$1\frac{1}{4}$
" 350	$12\frac{1}{4}$	7	1	" 950	$15\frac{1}{4}$	8	0
" 400	13	7	1 1-16	" 1050	$15\frac{1}{2}$	8	0
" 450	$13\frac{1}{2}$	7	$1\frac{1}{8}$	" 1150	$15\frac{3}{4}$	8	0
" 500	14	8	$1\frac{1}{8}$	" 1250	16	8	0
" 550	$14\frac{1}{4}$	8	0	" 1350	$16\frac{1}{4}$	8	$1\frac{3}{8}$
" 600	$14\frac{1}{4}$	8	0				

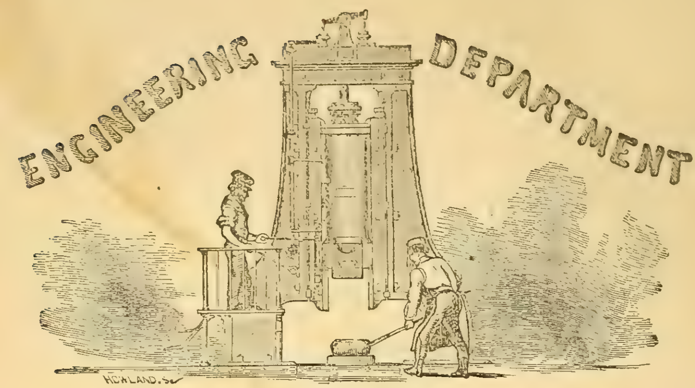
Elm and white oak (both English and American) is allowed by the Lloyds for the highest grades of service.

The introduction of a curve upward at the forward end of the keel, has been adopted both on large as well as small vessels, and may be regarded as an improvement in the working qualities of all vessels possessing this peculiarity, inasmuch as it not only facilitates their movements when in stays, but it eases the absolute resistance at the extremities; and particularly in large steamers it is of great advantage, they being inclined to trim by the head. The scarph of keels, when well apportioned, range at an angle of about 6 degrees with the upper edge of the keel; and in the upper course of keel, it is the custom to make the nib of sufficient depth, to come below the garboard seam, so also with the scarph of the stem; these upper nibs are usually caulked with new rope-yarns, laid singly in the nibs, which should first be opened with a cross-cut saw.

It will be seen that by defining the angle of the scarphs, they have no defined length, unless the timber to be scarphed, be of a given depth, when it may readily be determined. For example, a keel 18 inches deep, as shown by the engraving Fig. 2, with upper nibs of scarphs $4\frac{1}{2}$ inches, and $3\frac{1}{2}$ inch lower nibs, with 8 feet length of scarph, would give an angle of 6 degrees with the upper edge of keel; and by referring to Fig. 1, we shall discover that at an angle of 6 degrees, the remaining strength, as compared with a

scarph the whole length of the log, is only equal to 62 per cent., without deduction for the nibs, the proportionate loss of which may be seen to be nearly equal to 42 per cent., leaving 58 per centum of the strength of the log, if it were without scarph, the saw-cuts only being made the depth of the nibs. But this is not all; we have the loss of strength consequent upon the scarph to be deducted from the 58 per cent., leaving but 20 per centum of the entire strength of the log, before being cut, and whatever of strength above this amount is obtained, under the circumstances above-named, is obtained from the fastening, which, under the most favorable aspect, can never be made to equal the original strength, or the 58 per centum, which is the whole strength of the fibres (nibs deducted.) In Fig. 1, we have shown by the margin lines the proportions usually adopted for the nibs of the scarphs, and the inner lines at which the angles commence, represent the ratio of strength remaining at every successive line; hence we say, that inasmuch as a scarph is understood to be a mode of connecting timber, in which every grain of the entire log is cut, we can only obtain a unit of strength, or the greatest amount, by extending this line of separation the entire length of the log, as shown by the line running from the lower corner at one end, to the upper corner at the other, where we have the number 100, or unit of strength, in regular succession, we have also the per centage of strength marked in the margin, and the angles extending to the corner below, until we reach the end, where the square cross-cut equals 0, or an entire absence of strength. If this loss of strength were not made otherwise sufficiently clear, it would only be necessary to point to the dotted lines on Fig. 2, when the subject, we think, will appear unmistakeably clear.





PADDLE-WHEELS.

It would seem that a superabundance had been already written upon this subject. The mechanical and engineering journals both of Europe and America, have teemed with essays and strictures upon the numerous transpositions in the application of the paddle-wheel, as a means or mode of marine propulsion. A thousand minds have been engaged in improving it, while as many more have been equally industrious in finding a substitute, free from its manifest drawbacks, and relieved from its manifold incumbrances. The list of patent claims has been swelled to an indefinite length, while the numerous models exhibit an originality of thought, that would seem to challenge competition in any department of engineering. It would seem as if the very elements had been made to bend beneath this department of inventtive genius, and yet it requires but a plain common sense review of the developments of its history, by a plain common-sense man, to discover, that there is much of error in the so-called scientific investigations which have been had upon the *paddle-wheel;* and in order that this may appear manifest, we shall not seek examples in complex problems, abstruse and doubtful in their character. It is only necessary to consider the conditions upon which marine propulsion is obtained from the paddle-wheel, to enable us to determine its loss on the one hand, and its gain on the other. The power in its application to the wheel, bears a certain relation to its diameter, other things being equal, in connection with the length of the stroke or the diameter of the cylinder, and if the stroke be shorter, it is commonly made up by increased diameter of the cylinder, or by increased pressure of steam ; hence, we have only first to consider a determinate speed in the travel of the wheel which determines its required diameter. The slip, in much of its extent, is consequent upon, and belongs to, the model of the vessel, and this is the difficulty

with engineers generally; they begin to calculate upon their *expenses in slip without their host;* the *builder or modeller* of the *vessel* should furnish the slip or resistance of the vessel at a given displacement, and a failure to supply this data, is the fruitful source of many of the numerous blunders in marine propulsion. Having once secured the diameter of the wheel, we now arrive at the dip, and consequently, at the size and proportions of the engine, with the amount of fire-surface and steam room, commensurate with a demand of steam, equal to the capabilities of the engine to furnish the power necessary to turn the wheel up to the required number of revolutions, equivalent to the speed determined upon. If the wheel were like that of the driving wheels of a locomotive upon the railway, without slip, the engineer would be quite independent, and could compute his speed, or *approximate* the results, before making a trial; for we find that land engineers have failed to determine the efficiency of their engines, though there be no slip. How then can marine engineers expect to approximate the efficiency of their propulsory powers, in the absence of the resistance that the vessel itself exerts to retard their progress? As well might an engineer on a locomotive undertake to determine, with a degree of accuracy, the time he would arrive at the next station, through a *severe snow storm.*

It has been regarded as an acknowledged truth, both by ship-builders and engineers, that a solution of the problem of resistance upon vessels could not be obtained. We are hardly prepared, at this early stage of our editorial career, to promise a practical demonstration to the contrary, at a very early day; but we may promise the readers of the Nautical Magazine, that if we are sustained in our efforts to advance the cause of science, the problem will find a solution, without which, *science in marine propulsion* is not much more luminous than *moon-shine,* as the sequel will show. It is one of the best demonstrated truths in the operation of paddle-wheels, that as we enlarge the diameter with a given amount of dip, we increase the area of direct action, but this is always at the expense of power; hence the reason why a screw with the same diameter as that of the paddle-wheel, with equal submergence, is most effective, because the effect of the thrust is like that of the wind upon a sail, after we deduct the angular loss, entirely propulsive; and we have only to increase or diminish the pitch, and a desirable result is obtained in the adaptation of the screw to the power of the engine, while in the paddle-wheel, we may increase the diameter until the weight or strength of a school-boy at its periphery, may be the measure of an engine termed 1,000 or 10,000-horse-power. Hence, we perceive, that by increasing the leverage at the wheel we effectually diminish the power of the engine, inasmuch as the crank rarely equals one-third the length of the arm of the wheel; but although the leverage of the wheel against the crank, exhibits an application of power at the greatest disadvantage, we by no means discover the full extent of loss sustained, while the small dip, in connection with the wheel of large diame-

ter, furnishes the greatest proportionate amount of direct action, (an increased dip is most effective, all things else being equal) though it be at the expense of the number of revolutions of the engine. This has been abundantly proved on river boats as well as on ocean steamers. It may, in some cases prove, that a vessel has more wheel than the engine can drive effectively, which does not disprove our position. Again, if after having increased the dip of the wheel, we find it too resistant for the engine, we should reduce the length of the paddle, and the necessity of this reduction will appear manifest, when we consider that the water does not regain its solidity at the centre of buckets when of considerable length; hence it is a better application of power to increase the diameter of the wheel and diminish the length of the paddle. We now come to the waste of power in its application at the water: the depressing tendency aft, and the lifting effect forward, operates most visibly on the best models; hence, we have not only the waste of power in securing an improper trim to the ship, in addition to the enormous loss in angular appliance of the paddles, to which we must add, the leverage in the track of the wheel against that of the crank. These inquiries, it will be observed, are compounded, and find much of their significance in the number and breadth of the paddles in the wheel, whether in whole lengths or divided. This question must, of necessity, come in for a share of our attention; and lest we should be thought arrogating too much of this problem, we will present to the readers of the Nautical Magazine a fund of engineering skill, which, for reputation, must command consideration, not only on account of its connection with the Government, but because approved by a distinguished Engineer, and by the *Scientific American*, and published without comment in the August number of the *Franklin Journal*, from which we abstract the facts and omit the flourishes.

Experiments on the Paddle-wheels of the U. S. Steam Frigate "Mississippi," to determine the influence exerted on their slip by the omission of every other paddle, by B. F. Isherwood, Chief Engineer U. S. N.

During the Mediterranean cruise of the U. S. steam frigate "Mississippi, in the years 1849, 1850, and 1851, an experiment was made by the chief engineer, Jesse E. Gray, U. S. N., to determine the influence on the slip of her paddle-wheels by the omission of every other paddle. The "Mississippi" made a number of short passages between Spezzia and Leghorn, along "the tideless shores of the Mediterranean," a distance of 37½ geographical miles, of 6.085 feet. These passages were all uniform; the draught of water and immersion of the paddles not varying enough throughout to sensibly affect them. The mean of eight passages, made with the full number of twenty-one paddles in each wheel. After seven passages had been thus made, with considerable intervals of time between them, every other paddle was removed, reducing the number to eleven in each wheel, in place of twenty-one, necessarily leaving two in their original juxtaposition, from the odd (21) number. One passage was made with the paddles in this condition, with weather quite as fine and under circumstances quite as favorable as before; the total number of revolutions made by the wheels was ascertained by the counter, as before. The alternate paddles were

now restored, and during the last passage between the same points, and under the same conditions of weather, &c., as before, the first results were again obtained. During these experiments, the vessel's mean draught of water averaged 18 feet 11 inches. The paddle-wheels were 29 feet diameter, from outside to outside of paddles; the paddles were 11 feet in length, by 22 inches in width. The following are the dates of the passages, together with the total number of revolutions made during each passage by the paddle-wheels; this number was taken by a counter receiving its motion from the engines. The time of making the passages, steam pressures, &c., though not observed with precision, were about the same throughout.

Date.	Passage.	No. of revolutions made by the paddle wheels, as taken by a counter.
	Steaming with 21 *paddles in each wheel.*	
Sept. 10, 1849,	From Leghorn to Spezzia,	3,170
Nov. 17, " ...	" Spezzia to Leghorn,	2,920
" 25, "	" Leghorn to Spezzia,	2,940
" 27, "	" Spezzia to Leghorn,	3,050
April, 23, "	" " " "	2,960
Oct. 14, 1850, ...	" " " "	3,050
" 19, "	" Leghorn to Spezzia,	2,980
May, 31, 1851, ...	" " " "	3,020
	Mean of the eight passages,	3,011
	Steaming with 11 *paddles in each wheel.*	
April 19, 1851,	From Leghorn to Spezzia,	3,536

With the above data, making the calculations for the slip of the centre of pressure of the paddles, we obtain the following results, viz.:

Slip when steaming with 21 paddles in each wheel,.......12.79 per centum.
" " " 11 " " ....25,74 "

From the above it will be perceived, that halving the number of paddles in each wheel by the omission of every other one, just doubled the slip. But beside the incontestible evidence of the self-registering counter, there is the strongly marked effect produced upon the heavy and solid live oak hull. With 21 paddles in each wheel, the paddles at their periphery were 4.338 feet from centre to centre; with 11 paddles in each wheel, they were 8.676 feet from centre to centre; this latter distance seems great enough to enable an intermediate paddle to act with full effect, without enfeeblement from the adjacent ones.

We have in this example an illustration of the effect of reducing the area of propulsion from its full measure in the normal state, to about one-half of its original surface, with results differing widely from those claimed by the author of the article referred to, who informs us, that the slip or efficiency of paddles were reduced one-half, by reducing the number from 21 to 11. We are not left in the dark in this matter, for he also furnishes a sufficient number of facts to enable us to judge for ourselves. The facts are as follows:— In a given time, a pair of paddle-wheels of a given diameter, and with a determinate amount of power, perform the service with 11 paddles that they did under the same circumstances with 21 paddles, and yet we are told that the 11 paddles were less efficient than the 21. In this experiment an attempt

is made to show the proper distance between the paddles; and all the arguments (*not the facts*) tend to show, that there was double the amount of slip on the 11 paddles, while it is a demonstrated truth, as set forth in the statement, that the efficiency of the paddles was increased by separating them; or that a smaller number was sufficient, when kept farther apart, to do the same work, inasmuch as the voyage was performed in the same length of time; but again, the 11 paddles have no credit given them for the loss of pressure of steam, consequent upon an increased number of revolutions. The relative efficiency of paddles, under the new arrangement, may be shown thus

Revolutions.		Paddles.		Strokes.
3,011	×	21	=	63,231 per voyage.
3,536	×	11	=	38,896 "

Then $\frac{63231}{38896} = 1.625$, a clear gain of $62\frac{1}{2}$ per cent. in favor of reducing the number of arms, or separating the paddles. If it had been the design to show the efficiency of paddle-wheels, the area of paddle surface should have been maintained, either by increasing the length or breadth of the paddles, then the experiments would have been worth something more; they are not, however, entirely valueless. We are told that the last experiment, or the one with the 11 paddles, was not repeated, from "prudential motives," for the concussion and shock on the water of the entering paddles, now that they were "removed so far apart," produced so excessive a vibration and shaking of every part of the vessel, as to be very uncomfortable to the persons on board:—the "paddles struck the water as though it were a solid rather than a fluid substance." And this was (we are told) the more remarkable, because with the twenty-one paddles in each wheel, not the slightest vibration of the hull had ever been experienced from the action of the machinery. Our perceptions are perhaps set at an angle too obtuse, to discern anything remarkable in this. In the first instance, nearly one-half of the power of the engine was expended in displacing water, in endeavoring to make a cavity in the water on each side of the ship equal in size to the immersed portion, and the only reason why they did not succeed was, that the paddles were too far apart. In the second instance we find, that this waste of power ceases, as soon as the cause, or the intermediate paddles are removed. We are farther told, that the probability is, that "few readers would have expected such a result; a happy conclusion this, in which *some respect is manifested for the common sense of those who* are qualified to judge for themselves. To all such, we have only to refer to the new royal yacht, Victoria and Albert, the particulars of which were given in the last volume of the Nautical Magazine, to show the advantages of increasing the diameter of the wheel, and at the same time reducing the number of arms in the wheel. In this vessel the diameter of the wheel is 31 feet, and the number of arms 14, while in the Mississippi the diameter is 29 feet, and the number of arms 21. The Victoria and Albert attained a speed

of 17 knots, which, although attributable chiefly to the model, could not have been obtained without an efficient wheel. The paddles were 6 ft. 8 in. apart at the out edge, whereas they were but 4.538 apart in the Mississippi in the original wheel, and although increased to 8.676 feet in the experiment, it only proves that if the same area had been maintained, and the centre of pressure kept at the same diameter when the space was increased, the number of revolutions would have been less, and the efficiency per square foot still more apparent than it proved to be with 11 paddles. This is not the first time that the world has been favored with remarkable discoveries by engineers of the U. S. Navy. The Susquehanna was said to have performed the most remarkably short voyage, and the most economical one on record; which was accomplished at the moderate expense of a speed not exceeding $6\frac{1}{2}$ miles per hour. These are not regarded by us as astonishing, nor do we regard them as the index to an age of improvements. It is a notorious truth, that the number of revolutions of a steamer's paddle-wheel with a given amount of power is in the ratio of the resistance, and this holds good whether the steamer be made fast to the wharf, or is at her moorings, whether the number of arms be many or few; hence the only question is, whether with a given area of paddle surface, the greatest amount of resistance can be obtained from a paddle-wheel of a given diameter distributed on many or few arms.

We say that it may be set down as an invariable rule, that the right-angled resistance from the surface of one paddle at its central edge, should pass below, and entirely clear of the paddle before it; a separation beyond this is not a gain, and when placed nearer than this, there is a loss; the effect of the resistance is a direct reaction against the paddle before it.

The Rate at which Waves Travel.—A paper was read by Professor Bache before the American Scientific Association, stating that at nine o'clock on the morning of the 23d of December, 1854, an earthquake occurred at Simoda, on the island of Niphon, Japan, and occasioned the wreck of the Russian frigate Diana, which was then in port. The harbor was first emptied of water, and then came in an enormous wave, which again receded and left the harbor dry. This occurred several times. The United States has self-acting tide gauges at San Francisco and at San Diego, which record the rise of the tide upon cylinders, turned by clocks; and at San Francisco, four thousand eight hundred miles from the scene of the earthquake, the first wave arrived twelve hours and sixteen minutes after it had receded from the harbor of Simoda. It had travelled across the Pacific Ocean at the rate of six and a half miles a minute, and arrived safely on the shores of California, to astonish the scientific observers of the coast surveying expedition. The first wave, or rising of the waters at San Francisco, was seven-tenths of a foot in height, and lasted for about half an hour. It was followed by a series of seven other waves of less magnitude, at intervals of an hour each. At San Diego similar phenomena were observed, although on account of the greater distance from Simoda, (four hundred miles greater than to San Francisco,) the waves did not arrive so soon, and were not quite as high.

THE UNITED STATES WAR STEAMER POWHATTAN.

It is somewhat surprising to us, as well as to others familiar with maritime progress, that in the face of so many facts, there should still be a disposition on the part of Naval Engineers to keep the performances of our Government war steamers before the world, as indicative of a state of progress, either in nautical mechanism or engineering, commensurate with the age. A writer in the *Franklin Journal* of September, in referring to the remarks which have been made, relative to their inefficiency, tells us that in some instances they have been carried to such an extent, as to leave the impression, that all the steamers of the Navy are abortions, without taking into consideration the "*difference* of *construction*," size of *masts, spars, &c.*, between a man-of-war as now constructed, and a merchant vessel, and the facility a steamer of the latter class has for repairs, compared with a man-of-war on a foreign station. It is this *difference* of *construction* that has rendered nearly all the past efforts of naval constructors abortive in this country, which engineers seldom think of. It is the model and disbursement of materials which make the *difference* of *construction*, growing out of a mistaken notion of the laws of resistance. But we have a new feature presented by this writer—*he* would call attention to the *masts, spars*, &c., as disqualifying the vessel from acquiring the same facility of movement that a merchant vessel would acquire; and in order to show that she is the swiftest war-steamer afloat—he furnishes an abstract of her steam-log, exhibiting her performance on the China Sea; and for this purpose, in 1854, a four days' run is selected, in which she had a smooth sea and a fair wind, when with sail set, on those very *masts and spars*, (*which would lead us to suppose that they were additional helps*,) she averaged 10.63 knots per hour, and then, in the face of these facts, he tells us that she could, in smooth water, without sail, secure an average speed of 12.8 knots per hour, at the same line of flotation. Now, who cannot see that every such article is calculated to lower the standard of utility with respect to the vessels of the United States Navy. It is plain to every practical mind, that this vessel has done her best, in a smooth sea and with a fair wind, and that she has due credit for it. What more can be done, we are also ready to *chronicle when it shall have been performed;* and is not this enough? We have even done more than this—we have given her credit for having outrun her wheel travel on her trial trip. If naval engineers are satisfied with the performance of our war steamers, we are not, and are so much interested, that we promise to give due notice of the first signs of improvement, as soon as we shall have been put in possession of the *facts*; a word more by way of advice. If this writer will but secure the resistance of the ship before obtaining the slip of the wheel, he will discover that it is not the fault of the *masts, spars, &c.*, nor yet of the guns, (as is sometimes said) that our war steamers are so far behind the age.

MACHINERY AND HAND LABOR.

At a recent meeting held in this City, ostensibly called a "Mechanics' and Workingmen's Meeting"—the contract system for cleaning the streets was denounced, and one of the speakers was exceedingly severe on the street-sweeping machines. In a flight of nonsensical oratory he exclaimed, "tell us not of contracts to clean the streets with machines, when the work can be done by hand."

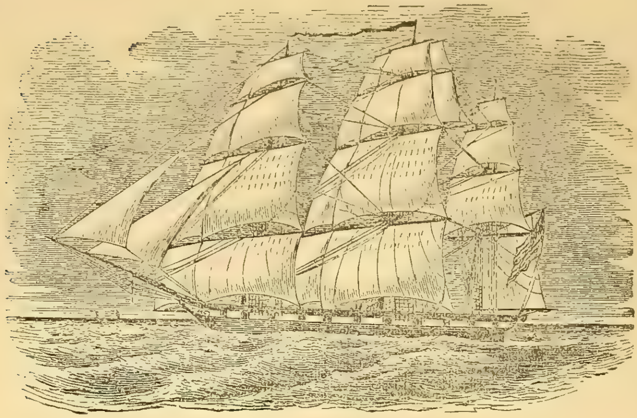
There may be something wrong about making contracts for cleaning the streets; this we will not discuss; but we do say, that any man who declaims against the use of machinery for any purpose whatever,—at the present day—must be a knave or an ignoramus. The man who denounces the use of machinery, to show that he is honest in what he says, should march out to the wilderness to gain his living, with only the dress, weapons and implements furnished him by nature. He must not take a coat on his back, for the cloth of it is woven by a machine. He must not take rifle, axe nor knife, for all these are made by machinery. He must go forth to make his house like the beaver, and take his prey like the panther.

We frequently hear of machinery being denounced because of its superseding hand labor; but machinery has not decreased the demand for labor; it has only changed its direction; it has become the drudge, man its director. And if machinery is to be condemned, where shall we begin? The seamstress may complain that sewing machines have taken away her labor. That may be; but it would be just as reasonable to complain of the needle and thread she uses, for they are made by machinery. The laborer who has been sweeping the streets, may complain of the street-cleaning machines; but was not his own shovel made by a machine? A few moments reflection upon the uses of machinery ought to convince the most ignorant and skeptical of the benefits conferred upon man by machinery. It is a test of civilization—it is a grand civilizer. Take it away from man, and he sinks into the most degraded savage.

We clip the above remarks from the *Scientific American,* and commend their consideration to the opponents of machine labor, in the construction and navigation of vessels, where it can be equally advantageous in advancing art in nautical mechanism. At least two-thirds of the drudgery of the axe, adze, maul, and plane, may be performed better and cheaper by steam, in the ship-yard, while the scarcity of seamen audibly admonish ship-owners of the necessity of having a steam-engine on board of every vessel of 400 tons and upward. [Eds. Naut. Mag.

The Boston Steamers.—A meeting of the Boston and European Steamship Company was held September 11, 1855, when the committee appointed to solicit subscriptions, reported, that the absence of many merchants and capitalists from the city, during the summer months, had interfered with their progress in subscriptions; but, at the same time, sufficient public spirit had been manifested to favor a belief in the successful accomplishment of the enterprise. It was voted to adjourn till October 18th. Col. Enoch Train goes to England by this week's steamer, for purposes connected with the undertaking.

Nautical Department.



THE FORBES AND THE HOWE RIG.

THE following correspondence between Captain R. B. Forbes and Captain Geo. H. Bradbury, will be read with interest, not only by nautical men, but by ship-owners and builders :—

BOSTON, Sept., 1855.

MESSRS. GRIFFITHS & BATES,

Editors Nautical Magazine.

DEAR SIRS:—I beg leave to hand you herewith a copy of my letter to Capt. Bradbury, of the ship "N. B. Palmer," who formerly commanded the "Lantao," with my rig, or something nearly like it; the only difference being that the fore-yards, while smaller than the main, did not fit on that mast one stage higher up, as originally recommended by me. I also enclose a copy of Capt. Bradbury's answer, and beg that you will publish the same, with this letter, in your next number, for the information of ship-owners and others equally interested.

I give you my letter, as well as the answer to it, because I wish those who feel an interest in the subject to read my arguments as well as those of Capt. Bradbury, and give them their due weight, and nothing more.

I think Capt. B. has given many good reasons for his preference, and I am free to acknowledge that they are such as to settle the question of economy and superiority for merchant ships.

Perhaps my original rig, with the masts fidded abaft, is the best for war ships, and particularly for war steamers and surveying ships, or for those likely to be exposed in open roadsteads.

It cannot be expected that I shall give up my pet rig *in toto*, "stock and fluke;" but I cordially yield to the opinion of Capt. Bradbury, who reported my rig, in Lantao, so superior to the old rig, that I took it for granted he would find nothing to equal it.

I am very truly, your servant,

R. B. FORBES.

Boston, August 4, 1855.

Captain Bradbury,

Ship N. R. Palmer, New-York:

Dear Sir,—

The respective merits of the Howe's and the Forbes' rig have been discussed in the papers of the day, and in Nautical works, and you know that I am desirous that the public shall have the benefit of your experience; indeed, I am somewhat pledged to make known the fact, that you prefer the Howe's to my rig, if it is a fact, as Messrs. A. A. Low & Brothers wrote me on the 31st ultimo. I have often said that I could not see the advantages of the Howe's rig, *take it all and all*, over mine, excepting for the purpose of fitting an old or already sparred ship. I have stated that the Howe's rig is the most economical in the first cost, either for a new or for an old ship, and therefore I presumed that it would be more generally adopted, and I have stated, that I should not give up the old and long-cherished idea, that mine was on the whole the strongest, safest, neatest and most handy, up to the point of close-reefed topsails;—and apart from the cost—until some good seaman who had tried both, should pronounce in favor of Howe's rig. Messrs. A. A. Low & Bro., in answer to my inquiry say, simply, "Captain Bradbury prefers the Howe's to the Forbes' rig, and will give you his reasons when he sees you." I have asked the Editor of the Nautical Magazine to send to Messrs. Low a copy of the May number, in which are some remarks as to the new rigs. I refer you to what is said in pages 121 and 122, and would like to know how far your experience of both rigs justifies my remarks, as well as the editor's note, p. 122. The great question *for me* is, whether the Forbes' rig is inferior to Howe's rig, *apart from the cost*, and taking all its advantages into account; for instance, you may say, that "the Howe's rig is the best for stormy latitudes, where close reefing becomes necessary, and as you can dispense with some ropes, it is on the whole more convenient, and as it is considerably cheaper I prefer it."

But that is not the question with me. I want to know candidly what are the comparative merits apart from the cost. To my notion, all ships should be sparred, so that the principal sails are in the centre of the ship, on the mainmast. My rig is specially designed to accomplish this end, and at the same time, to make the sails available on the different masts. True, these proportions in the Lantao and Mermaid, and some others, have been changed—has the change been judicious? True, a ship may go several voyages, and be fortunate enough never to want to bend a fore-topsail for a main-top-gallant sail, or a fore-top-gallant sail for a main royal, and *vice versa*; and a ship may go many voyages and have no occasion to test the value of my rig, while riding in open roads where the topmasts must be housed at a certain stage of the barometer. A ship may be sailed for years, and never have the opportunity of clearing off shore with her topmasts housed, or on deck —still, these are advantages of considerable consequence to vessels of war and to transports in time of war, and occasionally they may be very valuable to merchant ships in time of peace.

Some of the advantages claimed for my rig, as originally put on the Massachusetts, with the topmast abaft, are reduced by putting the masts before, and by doing this, the merits in particular named are reduced below the Howe's rig for a severe gale, and while topmasts *are aloft.* But suppose topmasts to be carried away or housed; in my rig you can set a double, or close-reefed topsail, and have all the support you want by cap-stays and cap-shrouds. In Howe's rig, under these circumstances, you may set your close-reefed topsail, but you have no cap-stays or backstays to support it. Again, I claim that my top-gallant sails, or upper topsails, are handier than those of Howe's rig, lighter, stronger, more easily furled, and *as easily* taken care of in a squall, while the ship is not reduced below double

reefs; true, *occasionally* reducing to close reefs in a squall may be advantageous, but take the average of heavy squalls met with in China voyages; do you want to come down to close reefs? I think, as the upper topsails are set and taken in ten or twenty times where the others are reefed once, that they are the sails which ought to be most handy, and this is the case with mine; you are not obliged to clew up and furl mine any more than in the Howe's rig. And now to come to the top-gallant sails, or royals of my rig; in Howe's rig, these sails are exactly like the top-gallant sail of the old rig, and are equally unhandy to furl in a squall; indeed, they require as many or more hands to furl them than are required to furl or spill the upper topsails. In my rig, these top-gallant sails, or royals, are easily clewed up, and easily furled, and when furled, they cannot easily be blown away. I contend that my rig is, on the whole, stronger, more symmetrical, and works better.

I am aware that the Howe's rig is cheaper, and in cases of altering a ship from old to new rig, I would adopt it myself. Now, having stated my own views as to my rig, I would say, candidly, that the Howe's rig has advantages for an Atlantic passage to the westward in the winter season. Do they counterbalance the want of strength at the cap, and the fact that in bracing up, an unequal strain comes on the sheets and leeches, because the lower yard swings on a larger arc of a circle than the topsail-yard? Again, the lower topsail of Howe's rig cannot sheet home at first when new, and cannot look so well as the topsail of my rig.

Now, as to the studding-sails in Howe's rig, I presume they are the same as in the old rig, the topmast studding-sail setting to the upper topsail yard. This cannot be done in my rig, because the upper topsail yard is not strong enough to bear a large studding sail.

I have heard my rig objected to on account of the number of tacks and halyards, but I have imagined that the sails in small pieces, with light yards, and light ropes, were handier on the whole, than larger sails. You must understand that *I have no other interest in the matter than to know from good authority wherein I have overestimated the advantages of my rig, and wherein I underrate Howe's rig.* If you can give me good reasons for preferring the latter, I shall give them publicity; for my object is, to let the public have the best rig, and if your reasons are conclusive, I ought to be the first to say so.

I am, very truly yours,

R. B. Forbes.

New-York, Aug. 6, '55.

R. B. Forbes, Esq.

Dear Sir:—Yours of the 2d, touching the comparative merits of the Howe's and Forbes' rig, and asking for the result of my experience with both, is received. In answer, I will state as briefly as possible my reasons for preferring the Howe's rig to yours, or rather to the rig of the "Lantao," which is the nearest approach to your rig of which I am able to form an opinion.

In your rig, although you might not be obliged to "douse your lower topsails in a squall, your two yards cannot be brought nearer than about three feet from each other, and the upper topsail cannot be stilled, unless by clewing up, which is not a light job. By Howe's rig, you can bring the two yards close together, whereby the sail is completely becalmed, and neither flaps nor chafes; and, I think, in a short squall, it matters little whether you are under double or single reefed topsails; and if the squall is of any length, the upper topsails of Howe's rig are easily reefed and set over the close-reefed lower sails. Men differ greatly in their treatment of squalls. I always treat them as heavy, and almost always clewed up the "Lantao's" upper topsails when threatened by a squall, in order to have the lower sails under control. The two chief advantages in Howe's rig are, that the

sheets of the upper topsail are never started, and that the lower topsail is always set. By this rig, although the squall has all the appearance of bringing the ship to close-reefs, you can carry sail equal to whole topsails, knowing that in three seconds you can reduce to close-reefs, and in five minutes you can furl your upper topsail; although, as you observe, it is rarely necessary to "douse" your lower topsails. I have always felt safest when in a position to do so, and which can only be done, in your rig, by clewing up the upper topsails. The upper topsails of Howe's rig, although larger, are much more easily furled than in your rig—we have only to knot the first stops on the yard (the sheets being fast) and the sail is snug; whereas, your upper topsail must be bunted—always a tedious process, especially when the sail is wet. I have always found that the most difficult process, requiring the most men, was close reefing, particularly when running free; although not often done in Indiamen, yet it is sometimes necessary. Squalls that bring a ship to close-reefs, are not rare in the China Sea, from May to January; and between Madagascar and the limits of the S. E. trades, N. W. of the Cape of Good Hope, it has been my lot to experience as many and as severe squalls as in any part of the world, also between the West Indies and the coast of America. During nine months of the year, the weather is such as to make Howe's rig desirable. One of the disadvantages of your rig is, that it has six yards, which hoist and lower, instead of three, as in Howe's rig; and although your upper yard is lighter than his, your lower one is necessarily heavier, and with the booms on it, (not used in Howe's) hoists very heavy, especially when braced up.

Any one who has commanded a ship, with your rig, will readily admit these objections. Again, I think that the one studding-sail of Howe's rig, as in the old rig, is infinitely preferable to the two sails of your rig; the advantages of their being light are nothing compared to the trouble and expense of a set of tacks, halyards, and booms.

I have never experienced the slightest trouble with the one studding-sail to the two topsails, in Howe's rig.

You say that one of your objections to the Howe's standing-topsail is, that it will not sheet home when new. I think this a very trifling objection, and one that applies to all courses, which are necessarily cut shoaler to allow for stretching to their proper size and place.

Another of your objections is, that an unequal strain is brought on the leeches of Howe's topsail, when braced up. To obviate this, I had my lifts fitted to be slacked or hauled at pleasure; and as I never kept a strain on them in light weather, I never had any trouble from taut leeches. The lifts ought to be fitted precisely like lower lifts of old rig.

In your rig, the courses and topgallant-sails are shoaler than in the old rig, and consequently more easily managed; but there is no reason why the courses and topgallant-sails of Howe's rig may not be of same proportions.

Howe's present upper topsail may be one-half larger than it now is, and be taken care of easily as long as you do not start the sheets. With your original rig, the top-masts fidded abaft, they can be housed more easily than in the other rigs. But in Howe's rig, with the topsail-yard supported from the top, instead of from the heel of topmast, you can send down topmast, and carry close-reefed topsail as long as the canvas will stand.

I do not think that the want of symmetry is an objection to Howe's rig; most ships of that rig, when seen at sea, are reported as your rig; in fact, with ordinary taste, either of the rigs can be made to look as well as the old, unless the top-masts are abaft, which, I think, you will admit, disfigures a ship very much; still I would not consider the looks as an objection, if the ship can be handled easier, safer, and cheaper, than with another rig.

I may as well add, that I think the Howe's rig as safe and as strong as any in use; at any rate sail can be carried until it blows away, without the support to caps and mastheads.

I am very truly,

(Signed) Geo. H. Bradbury, of ship N. B. Palmer.

Abstract of Log of Ship NIGHTINGALE, Captain SAMUEL W. MATHER, from New-York to Melbourne, Australia, 1854.

DATE. V.	Hour.	Latitude.	Longitude.	Currents. Direction.	Currents. Rate.	Barometer. Height.	Barometer. Ther. Att'd	Therm'r. Air.	Therm'r. Wt'r	Form and Direction of Clouds.	*Prop. of Sky Clear.	Hours of Fog A. Rain B. Snow C. Hail D.	Winds. Direction.	Winds. Rate.
	4													
	9													
Noon.	12													
	3													
	8													
	4												S. S. E.	
	9												S. by E.	
Noon 20th.	12	40° 19', N.	70° 40' W.			29,98		62	52					
	3												S. S. E.	
	8													
	4												S E.	
	9												S. by E.	
Noon 21st.	12	40 16	68 20			30,09		62	58					
	3												S. by E.	
	8													
	4												S. S. E.	
	9												S. by E.	
Noon 22d.	12	40 27	66 34			30,15		66	60					
	3												S. by E.	
	8									Cir., Cum., Str.			S. E.	
	4												S. S. E.	
	9							64	66	Cir.			N. W. Calm.	
Noon 23d.	12	39 58	64 52			30,18	66	68	70	Cum.	6		North.	5
	3					30,08	68	68	70				N. E.	
	8					30,07	66	67	68		3		N. E.	
	4								72	Cir., Str.			N. N. E.	
	9					30,04	67	67	72	Cir.	2			4
Noon 24th.	12	39 16	60 28			30,00	67	67	74	Cum	4			
	3					29,98	67						N. E.	5
	8					29,96	68	68	70				N. N. E.	
	4					29,90	69	68	70				N. N. W.	4
	9					29,89	69	68	69		5		North.	
Noon 25th.	12	37 40	57 50	D. R.		29,87	69	68	69	Cir.	0		N. E. by E.	3
	3												N. E.	
	8					29,84	68	68	69				North.	4
	4												N. N. W.	
	9					29,76	69	67	69	Nimb.		B 2		
Noon 26th.	12	36 10	55 13			29,76	69	68	69	Cum.	8		N. W.	3
	3												W. N. W.	
	8					29,83	71	69	69				W. N. W.	
	4												W. to N. W.	
	9					29,88	71	68	69	Cir. Str.				

REMARKS.

This Log is kept by sea account.

At 12.30 steamer left us outside the bar. At 1.45 P. M., light boat bore south one mile distant. Thick foggy weather during the night. Morning, light variable winds. Clear overhead, with dense fog around the horizon. Ends light variable airs.

Light airs and calms, with thick, heavy atmosphere. Passed many vessels bound eastward. Thick, drizzling, foggy weather through the night. Ends light airs. Sun very warm. Heavy fog banks. Several sail in company.

Light airs with heavy atmosphere. Large quantities of small fish around, and pieces of small detached sea weed. Ends with light airs and pleasant.

Wind light and variable. During the night wind baffling and calm. Ends, wind N. E. and pleasant. Plenty of gulf-weed, &c.

Light breezes with pleasant weather. Sky-sails have been on the ship since leaving port. Topmast, top-gallant, and royal steering sails set. Breeze freshened during the night, with fresh puffs. Pass- detached pieces of gulf-weed.

Light breezes and pleasant. Ship under sky-sails and royal steering-sails. During the night wind very light and baffling, with constant lightning from all quarters of the horizon. Morning, saw a few whale heading S. W. Ends with light breeze and pleasant cloudy weather. No Obs. this day.

Comes in with light breezes and cloudy weather. Sunset—wind getting westing in it and freshening somewhat. Squally appearances with light rain-spits during the night Sea very smooth. End with light breezes and warm. Sultry weather.

Comes in with light breezes. Ship under sky-sails, royal steering-sails, &c Light squalls of rain during the night. Morning, light rain spits; clearing up at 8 a. m. Passed small detached pieces of gulf-weed. Ends with light breeze, warm, sultry weather.

Noon 27th.	12 3 8 4 9	34° 50′, N.	52° 09′, W.	29,91 29,93 29,96 29,99	71 71 71 69	68 71 69 69	69 69 69 69		8		W. N. W. West. W. S. W.	4	Comes in with light breezes and warm, pleasant weather. A few detached pieces of sea-weed around. No birds. An unusual pleasant time off the coast. Sky-sails have been set since leaving New-York—a period of nine days. Ends light S. W. winds. Weather warm and pleasant.
Noon 28th.	12 3 8 4 9	33 32	49 15	30, 30,04	71 72	70 72	70 70	Cum.	9		S. W. S. by W. South.	3 2	Comes in with light airs and pleasant. Passed a few detached pieces of weed. Moderate breezes and hazy through the night. Sea has been remarkably smooth since leaving port. Ends, moderate breezes and pleasant.
Noon 29th.	12 3 8 4 9	33 14	46 49	30,06 30,06 30,05 30,07	72 73 73 72	70 72 72 72	70 70 70 69	Str. Cir. Cum.	6		S. by E. S. by E. S. ½ E.	3 5	Moderate breezes and pleasant, All possible sail set by the wind. Brisk breezes with pleasant, cloudy weather during the night. Sea very smooth. Ends, brisk breezes and pleasant weather.
Noon 30th.	12 3 8 4 9	33 24	42 47	30,13 30,14 30,16 30,20 30,25	71 72 73 72 71	70 70 72 71	68 68 68 69	Cum. N. by W.	8 3		S. by E. South. S. by E.	4 3 5	Brisk breezes and pleasant. Cloudy during the night. Morning—light breezes. Sea very smooth. "No weed seen." Ends with clear, beautiful weather. Wind light from the southward.
Noon 31st.	12 3 8 4 9	33 29	38 48	30,27 30,27 30,27 30,28 30,27 30,26	72 72 74 73 72 72	70 71 72 72 69	68 69 70 68 70	Str. North. Cir. Str. Cir. Cum.	9 7 8		South. South. S. S. W. S. W by S.	4 2 1 2	Light breezes and fair weather. Ship under sky-sails by the wind—very light airs through the night. Sea very smooth. Passengers perfectly delighted with such fine weather. Ends light S. W. by S. winds, and warm, pleasant weather.
VI. Noon 1st.	12 3 8 4 9	33 03	36 40	30,25 30,21 30,14	72 74 72	72 72 68	71 70 70		4		S. W. by S. W. S. W.	4 4 3	Light breezes and pleasant weather. Sea perfectly smooth. Through the night, wind variable and light; a few stars shooting towards N. N. W. Morning warm and fine. Wind gradually freshening. Ends warm and sultry, making slow passage.
Noon 2d.	12 3 8 4 9	30 49	35 02	30,13 30,12 30,12 30,10 30,10	72 74 74 68 70	71 74 74 70 72	70 71 70 72 72	Cir. Cir.	8 4	B. 1	W. S. W. W. S. W. W. S. W.	4 4 3	Light breezes and pleasant. At 2 p. m., wind west. Set steering-sails at 5 p. m. In all steering-sails. Wind W. S. W. Light breezes through the night. Morning—light rain squalls. At 11 a. m., wind west. Set steering sails. Ends pleasant. Passed large quantities of Portuguese men-of-war.
Noon 3d.	12 3 8 4 9	28 46	34 04	30,10 30,10 30,12 30,16	74 75 75 75	71 74 73 68 78	73 72 72 72 73	Cum. Cum.	6 3		W. by S. W. by S. S. W. to N. W.	4 2 1	Light, variable airs and pleasant. At 2 p. m., light rain squalls. Wind very baffling through the night. Weather cloudy. Morning—light airs and calm. Ends warm, sultry weather. Wind S. W.; very light and baffling. Small easterly swell running. No birds nor fish.
Noon 4th.	12 3 8 4 9	27 40	33 34	30,16 30,15	75 76	74 76	73 72	Cum. Cir. Cum.	5		N. E. to S. W. Calm.	1 1	Light breezes. At 4, light airs and calm. Baffling airs and calms during the night. North east swell in motion. Morning, calm. Ends warm and pleasant. Wind light from S. W. to S. W. by W.
Noon 5th.	12 3 8 4 9	27 10	33 15	30,18 30,20 30,20 30,23	76 76 76 75	76 78 76 74	73 76 73 72	Str.	9		Calm and S. W. S. W. Calm.	1 1	Light S. W. airs, with warm, pleasant weather. At 4 p. m., calm. Dead calm through the night. Morning the same. Ends very light northerly airs. Hard chances.

Abstract of Log of Ship NIGHTINGALE, Captain SAMUEL W. MATHER, from New-York to Melbourne, Australia, 1854.

Date.	Hour.	Latitude.	Longitude.	Currents. Direction.	Currents. Rate.	Barometer. Height.	Barometer. Th'r. Att'd.	Therm'r. Air.	Therm'r. Wt'r.	Form and Direction of Clouds.	*Prop. of Clear Sky.	Hours of Fog A. Rain B. Snow C. Hail D.	Winds. Direction.	Winds. Rate.	REMARKS.
Noon 6th.	12	26° 33′ N.	32° 56′ W.							Cum. Str.			Calm and N.	1	Comes in calm. Sea perfectly glassy. At 4 p. m., light cat paws from N. E. Set part steering-sails. At 8, in all steering-sails. Wind light and variable through the night. The day terminates with moderate S. E. by S. winds, and pleasant. Queer trades.
	3					30,20	77	76	76						
	8					30,20	76	74	74				Calm.		
	4							72	74				N. E.—S. E.		
	9					30,18	74	72	74						
Noon 7th.	12	25 04	33 22			30,18	74	72	74	Cir.	8		S. E. by S.	3	Moderate S. E. Winds and pleasant. At 4 p. m., wind E. S. E. Brisk breezes during the night, with occasional light rain spits. Large S. E. sea on. Ends fine breezes and pleasant.
	3					30,14	73	72	71						
	8					30,14	73	72	72				S. E. by E.	3	
	4					30,14	73	72	74				E. S. E.	4	
	9					30,12	73	72	74						
Noon 8th.	12	22 05	32 47			30,10	73	73	74	Cum.	9		E. S. E.	5	Brisk breezes and pleasant. Sky-sails set by the wind. During the night, cloudy, with fine breezes. Morning—hazy; wind unsteady. Several flying fish came on board. Slight southerly currents as shown by Massley's Patent Log. Ends with brisk breezes and pleasant, hazy weather.
	3					30,10	73	74	72						
	8					30,10	73	72	72	Nimb.			E. S. E.	5	
	4							71	73		3		E S. E.	5	
	9					30,08	73	73	73						
Noon 9th.	12	18 19	32 03			30,08	75	72	73	Cum.	4		E. S. E.	5	Brisk breezes and pleasant. Ship under sky-sails steering south. Fine breezes and flawy, with light rain squalls during the night. E. N. E. swell getting up. Passed a Brig steering W. S. W. at 4 p.m. Ends fine breezes and pleasant, cloudy weather. Set fore topmast steering-sail.
	3														
	8					30,05	74	72	73				E. S. E.	5	
	4												E. S. E.		
	9					30,05	75	75	73						
Noon 10th.	12	14 14	30 52			30,03	75	75	75	Nimb.	3		E. by S.	5	Brisk breezes and hazy. E. N. E. sea in motion. Wind getting light at sunset. Heavy dew, with passing clouds during the night. Morning hazy. Wind freshening. Ends with moderate breezes. Hope this breeze will continue the next 24 hours.
	3														
	8					30,02	76	76	74		2		E. by S.	5	
	4							76	76				E. by S.	5	
	9					30,02	76	78	78	Cum.	7				
Noon 11th.	12	10 25	30 00			30,02	79	77	79	Nimb.	3		E. by S.	5	Fine breezes. Ship under topmast and T. G. steering-sails. Dark, squally appearances at sunset. Fine breezes with damp atmosphere through the night. Morning—wind slacking, with rain from 8 to 9 a.m. At 9,30 clearing up. Wind freshening. Heavy N. E. sea on. Ends with dark, threatening appearances from S. E. to S. W. Wind suddenly abating.
	3														
	8					30,02	79	78	78				E. by S.		
	4					30,00	78	79	80				E. by S.		
	9					30,00	79	79	81	Nimb.		B. 1 H.			
Noon 12th.	12	6 59	29 00			30,00	79	79	81		2		East.	4	Light breezes. At 1 p. m., rainy. At 3 holding up. Wind very light, E. to N. Midnight—wind light and variable from S. S W. to S. W., and calm. Lightning at S. E. Heavy appearances all around the horizon. Morning—wind veering, and hauling from N. W. to N. E., light. 11,30, clearing up. A heavy swell these 21 hours from N. E. A strong current. Ship's head for 22 hours S. ¼ E. to S. E.
	3					29,95	79	79	81			B. 2 H.			
	8					29,98	79	81	81		0		E. to N. and calm.	2	
	4											B. 6.	S. W. to S. & calm.	1	
	9					29,98	79	76	80	Nimb.	0				
Noon 13th.	12	6 15	28 04	N. 58° E	43	29,96	78	76	79		1	B. H.	N. W. to N. E.	2	Light variable airs, with occasional showers. Squalls of rain during the night. Morning—wind S. At 8 a. m., calm. At 9 light breezes from S. W. to S. S. W. Every appearance of being in the vicinity of the trades. Ends light airs and fair weather.
	3					29,95	79	82	81						
	8					30,00	85	82	81	Nimb.			N. W. to N. E.		
	4									S. W.—N. E.			North.		
	9					29,95	78	79	81				S. and S. W.		

Noon 14th.	12	4° 55' N.	27° 43' W.	N.69° E.	14	29,92	79	79	82	Cir.		B. 1H.			Light, variable airs from S. W. to N. E. N. E. sea on with a counter swell to N. E. At 7, p. m., rainy, with vivid lightning all around the horizon. Light airs, with rain during the night. Mostly calm. Morning, light airs from S. to W., and calms. So ends the day calm. I have no doubt as to the strong current S. W., M.
	3														
	8					29,87	81	81	80				S. W. to N. E.		
	4												Calm.		
	9					29,95	80	97	81	N. W.—S. W.					
Noon 15th.	12	4 37	27 00	N.82° E.	42	29,95	81	79	81	Cir.			Calm, S. & S. W.		Comes in calm. At 4, p. m., wind south, with large S. E. sea on At 8, dark, threatening appearances from N. E. to E., with vivid lightning. At 9, wind east, with torrents of rain. Wind hauled suddenly, blowing fresh—moderating at midnight. Mid-watch rainy. Ship making 20 miles due S. per patent log. Morn'g—light rain sq'ls, clearing up at 7, a. m. At 8, wind S. E., very light. Ends light breezes from S. by W., and pleasant—current as stated.
	3														
	8					29,97	81	84	80				Calm & South.	1	
	4										0	B. 8.	East.	4	
	9					29,96	78	76	80						
Noon 16th.	12	4 19	26 43	N.10° E.	26	29,95	78	79	82	Cir.			S. & S. S. W.	2	Comes in with light southerly winds and pleasant; occasional light rain squalls during the afternoon. Saw at 4, p. m., a barque standing by the wind; starboard tacks aboard. During the night, passing clouds, with fine breezes canting eastward. Ends with brisk S. E winds and pleasant. "Twenty-nine days from New-York."
	3														
	8					29,95	80	80	82				South.		
	4												S. S. E.		
	9					29,97	78	78	77						
Noon 17th.	12	2 21	28 10	N.20° E.	18	29,95	78	78	78	Cir.	8		S. E.	5	Brisk trades, and pleasant. Ship under sky-sails by the wind. Heavy southerly sea on. Fine breezes through the night, with occasional rain squalls. Wind veering and hauling a point or two. Crossed the equator in long 29° 05′ about 4 p. m. This day ends with fine breezes, varying a point or so, with occasional light squalls of rain.
	3					29,93	80	76	76						
	8					29,98	80	77	78				S. E.		
	4												S. E. by S.		
	9														
Noon 18th.	12	1 03 S.	29 25			29,98	80	78	78	Distance sailed, pr Massey's Patent Log, to the line, 3,925 miles.	7		S. E. by E.		Fine trades and pleasant, with occasional squalls of rain. Moderate winds during the night, with light squalls. At 4, p. m., fresh squalls, with heavy rain. At 8, a. m., nearly calm. At 10, breezes freshening and squally, with rain. Ends, wind hauling several points, and squally. Had strong hope of making a good day's run.
	3														
	8					30,00	80	78	78				E. by S		
	4												E. S. E.	5	
	9					30,05	79								
Noon 19th.	12	4 29	29 16			30,00	78	72	78				E. to S. E,	5	Squally, rainy weather. 4 p. m. to 6, nearly calm, with large S. S. E sea on. At 6, wind freshening and squally. During the night winds very baffling, with frequent squalls. Latter part heavy rains and fresh squalls. Ends brisk breezes and squally. Ship under royals.
	3														
	8					30,00	78	77	78				E. to S. E.		
	4										0		E. S. E.		
	9					30,02	79				0	B. 4.			
Noon 20th.	12	7 06	29 32			30,01	78	76	78		2		E. to S. E.		Brisk breezes and squally. Wind veering and hauling some two points. Sea large from S. S. E. Squally, with rain through the night. Morning—strong breezes. In T. G. sails for the first time since leaving New-York. Ends strong breezes and fair. Set reefed fore and M. T G, sails.
	3														
	8					30,01	78	76	78				S. E.	5	
	4												S. E. by S.		
	9					30,02	77	77	79						
Noon 21st.	12	10 48	31 11			30,02	77	76	79	Cir.			S. E.	6	Strong trades and squally. Ship under reefed T. G. sails. Sea large from S. S. E. Brisk breezes and pleasant; cloudy weather during the night. Midnight, set whole T. G. sails. At 4, a. m., set sky-sails. Sea going down. The day ends with moderate breezes and pleasant weather.
	3					29,98	78	77	79	Cum.					
	8					30,00	78	77	79				S. E.	6	
	4												S. E. ½ E.	5	
	9					30,07	76	76	77						

Abstract of Log of Ship NIGHTINGALE, Captain SAMUEL W. MATHER, from New-York to Melbourne, Australia, 1854.

Date.	Hour.	Latitude.	Longitude.	Currents. Direction.	Currents. Rate.	Barometer. Height.	Barometer. Ther. At'd.	Therm'r. Air.	Therm'r. W'tr	Form and Direction of Clouds.	*Prop. of Sky Clear.	Hours of Fog A. Rain B. Snow C. Hail D.	Winds. Direction.	Winds. Rate.	REMARKS.
Noon 22d.	12	14° 26′, S.	32° 01′ W.			30,07	76	76	77		9		S. E. by E.	4	Brisk trades and pleasant. Ship under sky-sails by the wind; kept her clean raft full. No fish nor birds of any description. Notwithstanding our poor chances to the equator, hope to see Melbourne in 80 days. Ends with fine breezes and clear, beautiful weather. All the kites set.
	3					30,05	76								
	8					30,10	76	76	78				S. E.	4	
	4												S. E. by E.	4	
	9					30.12	75	75	76						
Noon 23d.	12	18 11	32 40			30,15	75	75	76	Cum.	8		S. E. by E.	4	Light breezes, with clear, beautiful weather throughout these 24 hours. At 6, p. m., passed two Brigs bound southwestward. No fish or birds of any description about. "Are getting farther west than I like."
	3														
	8					30,18	78	75	74		7		S. E.		
	4												S. E. by E.		
	9					30,22	75	73	74	W.N.W.—E.S.E.	8				
Noon 24th.	12	21 16	33 16			30,20	75	72	74	Cir.			S. E. ½ E.	4	Light breezes and pleasant. Sea smooth. Midnight—heavy southerly sea on. In this lat., July, 1852, had stronger breezes with northerly winds; 37 days from New-York. I confidently expected when we left to have been in the region of westerly winds this number of days out. Ends heavy S. sea running.
	3														
	8					30,23	76	72	74				S. E. by E.		
	4												E. S. E.		
	9					30,23	74	72	74						
Noon 25th.	12	24 15	33 10			30,23	74	73	74	Cir.	7		E. by S.		Light breezes and pleasant. Heavy southerly sea on. At 8, p. m., sea from E. N. E. Light breezes, with heavy dew during the night. Morning—warm and pleasant. Set steering-sails.
	3														
	8					30,23	74	72	70				E. by S.		
	4												E. by S.		
	9					30,23	72	72	70						
Noon 26th.	12	26 35	32 44			30,23	72	71	69	Cir.	9		E.		Light breezes and pleasant. All possible sail set. Heavy dew, with very light, baffling winds during the night. Morning—squally appearances at N. W. At 9, light rain, wind hauling for a short time to N. W. Sea quite smooth. Ends with light breezes from the north, and squally appearances from N.W. to N. E., west, southward. To east horizon clear.
	3														
	8					30,23	70	69	69				E.		
	4												E. N. E.	3	
	9					30,15	73	70	69	Nimb.					
Noon 27th.	12	28 42	32 14			30,12	72	70	67				N.	4	Moderate breezes with occasional rain squalls. Wind baffling. Fine breezes and rainy throughout the mid watch. At 4, a. m., wind hauling S. S. W., tacking into W. S. W. southerly, with squally appearances. Ends with fine S. W. by W. winds, and squally to S. W.
	3					30,05	71	70	67						
	8					30,04	70	69	67				N. W.		
	4												W.	4	
	9					29,85	69	65	66	Nimb.					
Noon 28th.	12	31 12	21 02, D.R.			29,80	67	65	66	Cum.	4		S. W. by W.		Wind rapidly increasing, with squally appearances. At 6 p. m., wind baffling from S. S. W. to S. W., with fresh squalls. During the night frequent squalls with hail and rain; nearly calm during the intervals. Morning—fresh breezes, baffling from S. S. E. to S. Occasional fresh squalls with rain. From 6, p. m., to midnight, vivid and constant lightning from S. E. to S. Occasional lightning from N. E. Ends horizon clear S. E. to N. W., via N.
	3														
	8					29,73	71	61	63	At 2 a. m. a squall, with very large hail, lasting some 20 min.			S. W.	4	
	4												S.	2	
	9					29,70	61	58	60	Cum.					

Noon 29th.	12	32° 43′ S.	28° 24′ W.		29,70	61	58	60		4		S. to S. S. E.	6	At 3, p. m., put the 3d reef in the topsails. Fresh gales with constant squalls, sea making rapidly. Midnight, set double reefed sails. Morning—fresh breezes with heavy flaws; top G. sails set over single reefed topsails. Ends pleasant and flawy.
	3				29,73	58	57	60						
	8				29,80	59	57	60				S. S. E.		
	4				29,95	56						S. by E.		
	9				30,00	57	56	63						
Noon 30th.	12	32 31	24 45		30,00	57	56	63	Cum.			S.		Fresh breezes and very flawy. At 4, p. m., wind very light and baffling; all sails set. Light breezes, very baffling, with heavy puffs during the night. Ends light airs and damp, cloudy weather. Large southerly sea on.
	3									4				
	8				30,08	60	58	62				S. by E.		
	4									3		S.S.W. to S. by E.		
	9				30,10	60	56	62		2				
Noon 1st. VII.	12	33 15	22 41		30,08	59	56	62		0		S. W. to S.	1	Light, baffling airs and calm. At 8, wind hauled eastward. At 9, light rain. Light breezes during the night from N. to E. N. E.; westerly sea running. Ends light breezes from the northward, and pleasant. All steering-sails set, steering per compass S. S. E.
	3													
	8				30,08	58	58	60				S. to S. E.	1	
	4				30,06	60						E.		
	9				30,04	63	60	62						
Noon 2d.	12	34 20	20 07		29,99	63	60	60	Cum.	7		N.	4	Light breezes, weather clouding up, light rain squalls at 4, p. m. During the night, fine breezes with passing rain squalls. Morning—clear over head, hazy around the horizon. Ends thick, murky looking weather.
	3													
	8				29,95	66	62	58				N. by W.		
	4											N. by W.		
	9				29,86	64	60	57						
Noon 3d.	12	37 27 D. R.	18 04 D. R.		29,80	63	60	56		0		N. W. by N.		From 1, p. m., to 6, wind west, clearing up. Fine breezes, with moderate squalls during the night. Morning, rainy. At 10, a. m., weather clearing up somewhat. Ends brisk breezes and damp hazy weather. Cape pigeons in abundance.
	3				29,75	62								
	8				29,80	62	60	54				W. N. W.		
	4											N. W.		
	9				29,65	61	59	53						
Noon 4th.	12	39 54	13 48		29,56	61	56	53		1		N. W.	6	Fine breezes, with passing squalls; weather clear at intervals. Mid-watch rainy, squally weather; wind very unsteady. Morning squally. At 9, clear and pleasant. Ends brisk breezes, with occasional squalls.
	3													
	8				29,52	66	56	51				N. W. by W.		
	4											N. W. by W.		
	9				29,35	61	52	50						
Noon 5th.	12	41 43	8 33		29,35	58	45	49	Cum. Str.	4		N. W. to N. N. W.	6	Fresh squalls with rain and hail; clear over head at intervals. Through the night fresh squalls, with large hail and sleet; wind very unsteady. Cape pigeons and Solon geese in abundance. Ends fresh, unsteady breezes and squally. Sun out in time to give lat.
	3				29,27	55								
	8				29,28	63	44	48				W. N. W.		
	4											N. W. by W.		
	9				29,30	51	41	47						
Noon 6th.	12	43 04	2 44		29,30	58	44	46	Numb.	2		W. N. W. to N. W.	9–7	Constant squalls of hail, sleet and snow. Moderate breezes and squally during the night, with squalls of snow. From 6 to 8, a. m., constantly snowing. Ends clear, cold weather. Wind light and very unsteady.
	3													
	8				28,35	54	42	44	Cum. Str.			W. N. W.	6	
	4											W.	5	
	9				29,65	50	42	44			C. 2.			
Noon 7th.	12	43 33	2 41 East.		29,67	47	38	44	Nimb.	4		S. S. W.	4	Light breezes and clear beautiful weather. At 8 wind west. Midnight—brisk breezes from N. W., clear, bracing atmosphere. Morning—brisk breezes and hazy, sea very smooth. No fish, but plenty of birds about. Ends fine breezes, and pleasant, hazy weather.
	3													
	8				29,90	55	40	44				S. S. W.	3	
	4											N. W.	5	
	9				29,90	47	42	42						
Noon 8th.	12	43 56	7 25		29,85	47	43	43	Cum.	4		N.	6	Fine breezes and pleasant. Sea very smooth. Clear, pleasant weather, with brisk breezes during the night. At 4, a. m., in steering-sails, wind hauling eastward. Ends fine N. E. by E. winds, and pleasant. A slight S. E. sea felt at times.
	3													
	8				29,88	51	44	42				N.	6	
	4											N. N. E		
	9				29,83	47	46	44						

Abstract of Log of Ship NIGHTINGALE, Captain SAMUEL W. MATHER, from New-York to Melbourne, Australia, 1854.

Date.	Hour.	Latitude.	Longitude.	Currents. Direction.	Currents. Rate	Barometer. Height.	Barometer. Th'r. Att'd.	Therm'r. Air.	Therm'r. W'tr	Form and Direction of Clouds.	*Prop. of Sky Clear.	Hours of Fog A. Rain C. Snow C. Hail D.	Winds. Direction.	Winds. Rate.	REMARKS.
Noon 9th.	12	44° 34′ S.	14° 01′ E.			29,78	47	46	44	Cir.	5		N. E.	5	Fine breezes and pleasant. At 2, p. m., light breezes. Sunset—light airs with heavy, damp atmosphere. At 8, wind N. W. During the night baffling in the wind, with light rain. At 6, a. m., wind S. W , freshening rapidly ; sea very smooth. Ends with P. G. breeze, damp, cloudy weather.
	3														
	8					29,72	53	50	44				N. E. by E.	4	
	4												W. N. W.	3	
	9					29,75	52	44	47						
Noon 10th.	12	44 53 D. R.	17 40 D. R.			29,70	51	46	44	Nimb.	0		S. W.	6	Fresh T. Gal. breeze, with light rain spits. An occasional S. E. sea running, strong breezes and flawy throughout the night. Steered E. S. E. to keep the P. G. sails on. At 4, a. m., moderating ; set royals. Ends moderate breezes and damp, hazy weather. A ship in sight, steering same way.
	3														
	8					29,76	48	43	42				S. S. W.	6	
	4												S. by W.	6	
	9					29,80	49	46	50						
Noon 11th.	12	44 00 D. R.	44 28 D. R.			29,80	49	46	49		0		S. S. W.	5	Moderate breezes and baffling, with light rain spits ; " N. E. sea occasionally. At 4, p. m., moderating, clearing up ; counter sea from the N. E. During the night, light airs, baffling and pleasant. So ends the day. " Current for the three past days N. 40° E. 48 miles.
	3														
	8					29,90	56	46	50				S. S. W.		
	4												N. W.	2	
	9					30,	51	46	50						
Noon 12th.	12	43 49	28 33			30,00	52	47	51	Cir.	5		N. W.	2	Light breezes and pleasant ; N. E. sea in motion. During the night light airs and variable ; pleasant. Morning calm, westerly sea. Ends light airs and calms.
	3					30,01	51	48	50						
	8												N. E.		
	4					30	54	46	42		4		S. S. E.		
	9					29,90	48	48	48						
Noon 13th.	12	43 57	30 20			29,85	50	47	48		8		S. and calm.		Comes calm and fair weather. At 8, p. m., light airs from all quarters. At 10, light breezes from N. E. Mid-watch, fine breezes and pleasant, hazy weather. Morning, brisk breezes. Ends hazy, S.E. sea felt occasionally. Passed stray kelp in small quantities.
	3														
	8					29,83	57	52	48	Cir.			Calm.		
	4												N. E.		
	9					29,70	48	49	43	Cir.	1				
Noon 14th.	12	44 21	33 31 D.R.			29,66	48	50	42				E. N. E.	6	Brisk breezes and hazy. Sea smooth. Light rain squalls at 6, P. M. Fresh breezes and thick. Heavy atmosphere during the night. The day ends thick. Wind fresh and gusty.
	3														
	8					29,60	52	46	42				N. N. E	6	
	4												N. E		
	9					29,46	50	48	40		0				
Noon 15th.	12	45 39 D.R	40 46 D.R.			29,40	50	50	40	Nimb.			N. N. E.	6	Strong breezes. Ship under T. G. sails. At 8, p. m., wind north, freshening with light rain. Passed through large fields of stray kelp. Midnight—wind hauling west, suddenly moderating. At 1, a. m., calm. Light navigable airs till 4, a. m. Calm till 6, a. m, At 6. wind breezing up from E. by N. Ends fresh breezes and cloudy.
	3					29,40	40								
	8					29,44	54	46	40				N. N. E.		
	4												W. and calm.		
	9					29,58	46	44	40						
Noon 16th.	12	46 48 D.R.	45 42 D.R.			29,55	45	42	38	Nimb.	0		Calm, E. by N.	5	Brisk breezes. At 1, p. m., thick foggy weather. At 8, p. m , wind N. E with light rain. During the night wind moderate with thick weather and light rain most of the time. Ends light N. W. winds and thick, with light rain. Westerly sea running.
	3														
	8					29,57	53	42	38			A. 7.	E. by N.		
	4												North.		
	9					29,60	53	46	36			C. 13.			

Noon 17th.	12	48 16 D.R.	50 54 D.R.		29,60	53	46	36		0		N. W.	5	Brisk breezes with light rain. During the night wind variable, with thick, damp weather. Morning, wind canting northward, clearing up. Hazy sun seen at intervals. Ends wind N. E., thickening up foggy.
	3													
	8				29,65	53	48	37			A. 6.	N. W.		
	4											N. W.		
	9				29,72	46	49	37						
Noon 18th.	12	49 32	56 53		29,60	44	44	37		1		N.	5	Wind canting E. by N. Light breezes with dense fog At 7 30, wind hauling N. W., freshening rapidly. At 9, clear overhead. Midnight breezes moderating. At 4, a. m., wind N. N. W. Damp, cloudy weather. Ends wind N. Moderate, with dense fog.
	3													
	8				29,20	50	40	36			A. 12.	E. by N.		
	4											N. W.	7	
	9				29,35	46	41	35						
Noon 19th.	12	50 34 D.R.	62 58 D.R.		29,30	46	42	35		0		N.	5	Moderate breezes with dense fog. At 4, p. m., rainy. At 1, brisk breezes and cloudy. During the night wind fresh in gusts; very unsteady morning. Strong breezes with snow squalls. Pleasant during the intervals. Ends fresh breezes; very gusty; wind veering and hauling 3 points.
	3													
	8				29,15	48	42	36				N. N. W.		
	4											N. W.		
	9				29,25	42	38	34						
Noon 20th.	12	50 52	69 04		29,28	42	38	34	Cum. Str.	5		W.	5	Fresh breezes with occasional violent gusts and snow squalls throughout. Through the night fresh breezes with severe squalls of snow. Ends moderate breezes with fresh flaws.
	3													
	8				29,32	45	40	34				W. N. W.	6	
	4											W. N. W.		
	9				29,38	43	30	34			C. 6.			
Noon 21st.	12	50 50	76 39		29,38	44	32	34	Cum.	7	D. 4.	W. N. W.	6	Comes in with brisk breezes from westward, attended with occasional severe squalls of snow and hail. Middle part more moderate. Ends moderate, S. W. breezes and pleasant weather.
	3													
	8				29,46	48	33	34				W.		
	4											S. W.		
	9				28,60	'0	31	33			C.'8.			
Noon 22d.	12	50 44	82 53		29,60	41	33	34	Cum.	6	D. 5.	S. W.	6	Comes in moderate, S. W. breezes and pleasant weather. Middle part, wind light and baffling from S. W. to N. W. Ends with light airs from N. W., and pleasant weather.
	3													
	8				29,58	40	31	34				S. W.		
	4											W.	5	
	9				29,45	42	40	36						
Noon 23d.	12	50 42	87 39		29,45	42	40	36	Cir.	8		N. W.	3	Comes in moderate N. W. winds and fine, pleasant weather. At 4, p. m, strong northerly winds and cloudy. Took in studding-sails and fore mizen royals middle part. Strong breezes and passing rain squalls. Ends strong breezes from E. N. E., and clear weather.
	3													
	8				29,43	46	41	36				N. W.	5	
	4											N. E.	6	
	9				29,30	45	42	38	Cir.	8				
Noon 24th.	12	50 42	95 45		29,25	45	44	38				E. N. E.	7	Strong breezes and clear till about 4, p. m.; wind hauling more to the east and moderating. Midnight quite clear overhead, but a very damp atmosphere, and light easterly breezes. Ends cloudy, with occasional light snow squalls. Wind light between squalls.
	3													
	8				29,30	43	41	38				E. N. E.	7	
	4											E.	5	
	9				29,45	42	40	36	Cum.	4				
Noon 25th.	12	52 56	99 25		29,45	42	40	36				E. by N.	3	Thick, disagreeable weather, with constant rain squalls the entire 24 hours.
	3													
	8				29,50	45	38	36				E. N. E.	4	
	4											E. N. E.	5	
	9				29,52	44	36	35	Nimb.	0	{ A 16 B. 8			
Noon 26th.	12	54 32	105 49D.R.		29,52	44	38	35				E. N. E.	5	Squally and rainy weather; the brave westerly winds which we were led to expect in these latitudes have sadly disappointed us, this being the fourth day with the wind in the eastern board, and dirty foggy weather. Hope soon for a change, or we shall be on a cruise to verify Lt. Wilke's discoveries in the Antarctic Ocean.
	3													
	8				29,50	46	38	34				E. N. E.	5	
	4											E. N. E	4	
	9				29,47	42	38	34	Nimb.	0	{ A 16 B. 8	N. E.	4	

Abstract of Log of Ship NIGHTINGALE, Captain SAMUEL W. MATHER, from New-York to Melbourne, Australia, 1854.

Date.	Hour.	Latitude.	Longitude.	Currents. Direction.	Currents. Rate	Barometer. Height.	Barometer. Th'r. At'd.	Therm'r. Air.	Therm'r. W'tr	Form and Direction of Clouds.	*Prop. of Sky Clear.	Hours of Fog A. Rain B. Snow C. Hail D.	Winds. Direction.	Winds. Rate.	REMARKS.
Noon 27th.	12	55 28	112 28D.R.			29,45	40	38	34				N. E.	4	Disagreeable, foggy and rainy weather still continues, with the wind from the eastward, and no appearance of a change, although the wind has slightly canted to the north. Our faith in strong westerly winds prevailing in these latitudes, growing weaker very fast.
	3														
	8					29,45	40	38	34				N. E.	4	
	4												N. E.	4	
	9					29,45	42	38	34	Nimb.	0	A 16, B. 8			
Noon 28th.	12	55 49	118 45D R.			29,45	42	38	34				N. by E.	4	Comes in fresh breezes and thick, foggy weather. Middle part hard squalls from north with a high sea; double reefed topsails. Ends moderate and cloudy. All sails set to the best advantage. Passed large quantities of kelp. This makes the fourth without seeing the sun.
	3														
	8					29,45	44	40	36				N.	4	
	4												N.	6	
	9					29,48	46	40	36	Nimb.	0	A 20, B. 4			
Noon 29th.	12	53 55	123 49D.R.			29,48	46	42	37				N. N. W.	3	Comes in good, steady breezes from N. W. and cloudy. At 9, p. m., the wind suddenly hauled to the westward and increased in force; continued blowing strong all night. Ends pleasant weather, with strong, steady breezes from S. W. Ship making 16 knots by log.
	3														
	8					29,46	46	41	38				N. N. W.	4	
	4												W.	5	
	9					29.38	46	42	42						
Noon 30th.	12	50 24	131 52			29,35	46	44	42	Cum.	0		S. W.	6	Strong winds and pleasant weather. Middle part wind more moderate, but with frequent squalls of snow and hail. Ends mild, pleasant weather, with a moderate breeze.
	3														
	8					29,46	50	46	42				S. W.	6	
	4												S. W.	4	
	9					29,74	53	46	46	Cum.	·5				
Noon 31st.	12	46 48	134 29			29,80	55	48	46				S. W.	3	Comes in with a moderate S. W. breeze and pleasant weather. At 9, p. m., the wind hauling more to the westward, and slightly increasing. Good breeze all night. Ends with fine westerly winds and clear weather.
	3														
	8					29,82	56	48	46				S. W.	3	
	4												W. S. W.	4	
	9					29,90	56	50	48	Cir.	6				
Noon 1st. VIII.	12	43 09	137 38			30,00	56	51	48				W.	4	Comes in moderate breezes and fine, pleasant weather. Midnight, passing rain squalls. Ends light breezes and pleasant.
	3														
	8					30,00	61	52	48				W.	4	
	4												W. S. W.	4	
	9					30,05	62	55	52	Cum.	7				
Noon 2d.	12	40 19	141 40			30,05	62	56	52				S. W.	3	Comes in, light breezes and pleasant. At 1, a. m., made Cape Otway light, bearing N. N. E., twenty miles distant. Moderate breezes and cloudy during the night. At 12, m., took a Pilot just outside the heads of Port Philip. At 8, p. m., dropped anchor in safety in Hobson's Bay.
	3														
	8														
	4														
	9														

THE PRINCIPLES AND APPLICATION OF LIGHTNING-CONDUCTORS ON SHIPBOARD.

In the British Navy, where the subject of protecting ships from the destructive strokes of lightning, has received the largest measure of consideration from the best scientific minds of England, it has been decided that the principle of security contemplates a system of fixed, permanent, and capacious metallic conductors, reaching from all the lofty and exposed points, throughout the entire ship, and terminating in the sea; and so placed as to be rendered secure, independent of the crew of the ship, to watch and preserve them. Common and temporary expedients have ever failed to meet the exigencies of conductors. They have been applied as chains, composing a part of the rigging, and of wires adjusted to the rigging, which, when most needed, have been found useless, by reason of chafes, and by being blown or deflected aside from their place, and instead of conducting the fluid into the sea, have conducted it into the ship. Owing to the trial of illy-contrived expedients, some of which have proved useless, and others dangerous, conductors had, at one time, fallen into disrepute.

To the labors of Sir W. H. Harris, we are chiefly indebted for an improved system of lightning-conductors, based upon more general principles than were commonly entertained in the consideration of lightning-conductors generally. He conceived the proper object to consist in bringing the whole mass of the ship from truck to keel, into that perfectly-conducting or passive state it would be as it regards lightning, supposing the whole were metallic throughout. The idea was a grand one; but the question arose how far metallic conductors, of a fixed and capacious kind, could be applied so as to meet all the varying conditions of a ship's masts, and all the casualties in which the vessel itself may become placed—a problem more difficult of solution, than at first might be imagined. It amounted to this, as he writes in 1853:—"To construct and apply lightning-conductors in ships, so as to be always in place, always ready to meet the most unexpected danger, to be permanently fixed, and of great capacity—admitting, at the same time, not only of every possible motion of the different parts of the masts, one on the other, but also of any portion of the mast being removed, either by accident or design, without in any way interfering with the protecting power; to be quite independent of the officers and crew of the ship, so as not to impose upon them the responsibility of their correct application, or the necessity of watching and *handling* them, of placing and replacing them, in times of difficulty, to their great peril and annoyance; to be quite clear of the standing and running rigging, capable of resisting external violence, and at the same time yield to any flexure the mast might sustain; finally, to be so applied, that a discharge of lightning, falling on the ship, cannot enter into any circuit in its passage to sea, of which the conductors do not constitute a part. Such

are the principal conditions we have to satisfy, in any attempt to effectually secure shipping against the destructive ravages of lightning. To meet such complicated conditions, the author of these remarks proposed, so long since as the year 1820, to give the ship a perfectly continuous conducting power, throughout the masts and hull, by incorporating with the masts a line of double copper-plates, of great electrical capacity, applied one over the other, in alternating close joints, so as to yield with the flexure of the spar, being firmly imbedded in a shallow groove, ploughed in the after part of it. These flexible metallic lines to be finally connected with similar conductors, fixed under the beams, and in the body of the ship, and connected with all the great metallic masses employed in the construction of the hull, and with the sea, thus bringing the general fabric into that peculiar electrical position it would assume, supposing the whole were metallic throughout. Thus the conductor, all the minor mechanical details having been perfected, became an integral portion of the ship and masts, and the vessel, consequently, made secure against the violent action of lightning, at all times and under all circumstances, without the officers and crew of the ship being parties to it in any way whatever.

So bold an application of the general principles of lightning-conductors was not at first received without much distrust and apprehension; almost every one having been led to imagine that metallic bodies had a peculiar affinity for the matter of lightning, and by inviting or drawing it down upon the ship, frequently accelerated the mischief they were meant to obviate; that from the position of the conductors the electrical discharge would necessarily pass through the body of the hull, whilst the variable positions which the sliding masts were liable to assume, would derange the line of conduction, and hence damage might ensue. The author, however, succeeded in proving by new researches in electricity, and by a very extensive induction of facts, derived from the analyses of numerous instances, in which ships of H. M. Navy had suffered from lightning, that such apprehensions were not tenable; that what we term lightning being nothing more than an explosive form of action of some occult power in nature, when forcing its way through resisting matter, we should, in giving it a free passage through little resisting matter, transform this explosive action, termed lightning, into a comparatively quiescent current, and so avoid those violent results, arising from disruptive force, altogether; that every species of matter was really, in itself, indifferent to agency of lightning, which only seized upon bodies generally, when they happened to be in a position to assist its progress, the course of the discharge being determined by certain laws of resistance, altogether independent of any attractive power supposed to exist in them; that provision being made for the continuity of the conductor from one mast to the other, in whatever position the sliding masts were placed, a line of least resistance to the sea would be always provided; the electrical discharge would hence certainly

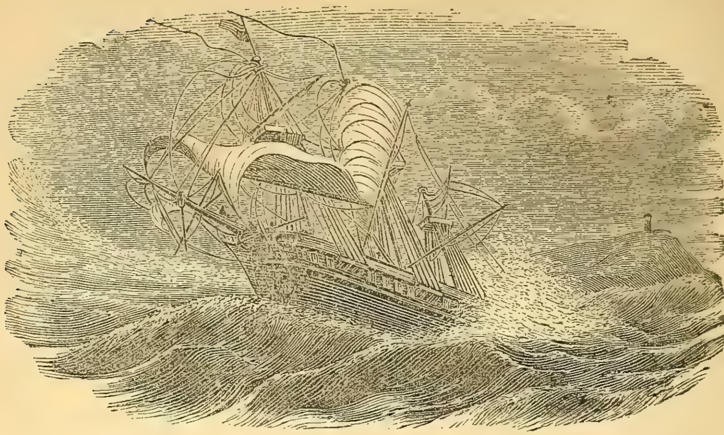
move in that line, and in no other; and in that, too, without any intermediate explosion. Full fifteen years' experience of these principles in H. M. Navy have proved them to be sound in science, and available in practice. Not only has it been found that ships thus fitted have, by the rapid transmission of electrical action, come securely and tranquilly out of more severe lightning storms, in various latitudes and climates, but even in cases in which heavy and furious discharges of thunder and lightning have eventually burst on the ship, still not the least ill consequence has ensued."

Harris's Conductor is applied as follows :—Beginning at the truck, a line of copper sheet, (this metal has eight times the conducting capacity of iron, and is not so easily oxidated,) in thickness and width according to the length required, in two layers, is incorporated with the masts, by being let into grooves, the entire length, and passing down to the shoe, forming a series of short joints, and so applied as to withstand any strain to which the spars may be subjected. Then he places bands of copper, applied in a similar way, under the beams leading to the iron knees or metallic fastenings, passing through the side of the ship, and also fore and aft bands from the foremast to the stern, and from the mizzenmast to the stern-post, whilst the conductors at the steps of the masts unite with metallic bolts, passing through keelson and keel, to the water, and thus the conductors at the mast-head become tied with all the metallic masses in the hull, and with the sea; and it has been proved by eighteen years' experience in the British Navy, that directly as lightning strikes aloft upon the conductor, all the dangerous and explosive action vanishes. So writes Mr. Harris to Mr. Forbes in 1848.

In the United States Mr. Forbes has patented an improvement in the application of lightning-conductors to ships, which is described as follows :—

"The nature of this invention consists in constructing and applying a system of socket-tubes to some convenient point on the head of the lower mast, and from thence branching off to the two after-shrouds, or any other of the shrouds, and over against the outside of the hull to the copper-sheathing, or down to such depth on the hull, that the lower end of the conductor shall always remain immersed in the water, under the ordinary rolling or pitching of the vessel when at sea." It is claimed that this method of conducting the fluid over the side of the ship, has advantages not possessed by Harris's plan, which cannot be attached to the shrouds.

Velociometres.—In nautical as well as in mechanical appliances, improvements are the watchword of the day and age in which we live. We have been shown an improvement in Velociometres for determining the speed of vessels, which bids fair to supersede all others. We are not at liberty to give a description of this instrument, until Mr. Ira J. Thompson, the inventor, has secured the letters patent for which he has applied.



DISASTERS AT SEA.

STEAMERS.

Nautilus, New-Orleans for Galveston and Brazos, Santiago, lost her mainmast, and much damaged.

SHIPS.

Thornton, Aug. 2, lat. 41 5, lon. 39 27, passed part of a wreck, about 300 tons.
Henry Ware, ashore at Prince Edward Island.
Vandalia Head, from Callao, July 7, put back, leaking.
Lightfoot, London for Calcutta, total loss, at entrance of Hooghly River, June.
Ocean Gem, put into Portsmouth, Eng., had a collision with a New-York ship.
Clarendon, Cardiff for San Francisco, put into Montevideo, leaking.
Amoor, spoken on the 28th July, in lat. 43 54 N., lon. 40 42 W., full of water.
Lombard Liverpool for Philadelphia, lost billet head, in a gale, Sept. 10, lat. 50, lon. 25.
Zaretan, Cardiff for San Francisco, lost some spars, July 27.
Unknown, dismasted, steering for Mayaguez, passed Sept. 28.
Alfred, San Francisco for Sidney, put into Tahiti, June 28, leaking.
Unknown, was seen 26th Aug., lat. 36 38, lon. 48 39 W., on fire.
Australia, Manila for New-York, put into Mauritius, July 3, leaking, and to repair masts and spars.
Josephine, New-York for Calcutta, put back, leaking.
Republic, Havre for New-York, put into Queenstown, leaking.
Whistler, Australia for Singapore, totally wrecked, King's Island, May 28.
Unknown, 300 tons, was seen 20th June, bottom up, lat. 32 50, lon. 42 45 W.
Tartar, put into Melbourne, Aust., June 20, in distress.
Ellen Foster, Boston for San Francisco, shipped a sea, and stove bulwarks, &c.
Messenger, New-York for San Francisco, lost jibboom, &c., off Cape Horn.
Plymouth, Liverpool for Mobile, put into Cork, Aug. 10, leaking.
Cerro Gordo, Newport, Eng. for St. Thomas, had rails, rigging carried away, &c., in collision with sch. Henry.
Monsoon, Hong Kong for Melbourne, lost both anchors.
Hannibal, San Francisco for Boston, put into Talcahuano, leaking badly, May.
Mariner, Liverpool for Boston, touched on Shag Rock, but came off without assistance.
Polynesia, lost foretopmast, foretopsail yard, mizzen topsail yard, &c., off the Horn.
Rob Roy, lost bowsprit and jibboom.
Unknown, was seen steering E., with loss of jibboom and all her topgallant masts.
Juniata, Bahia for Trieste, got on the rocks off Parsley Island, on the Barbary coast, Aug. 9.
Wilson, returned from Gaspe, leaking.

BARQUES.

Eliza Ann, Ardrossan for Portland, put into Troon, leaking.
Laconia, Boston for Philadelphia, lost fore-topgallant mast, in collision with brig Shurtz.
Ortona, Rio Janeiro for Valparaiso, burned at Fort William Harbor, Falkland Islands, April 25.
Gay Head, Constantinople for Boston, put into St. John's, N. F., leaking.
Wild Wave, off Cape Horn, 21 days, split sails, and received other damage.
Ork, Sidney for Ork, sprung foretopmast, May 24.
Columbia, Honolulu for Hunter, put into Tahiti, leaking.
Gilbert, Miramichi for Newport, Eng., wrecked at Mordart, June 25.
Swan, Mauritius for Swan River, put back, June 25, leaking.
Andrew, New-York for Montevideo, put into Halifax, leaky.
Elvira, San Francisco for Sidney, N. S. W., put into Asia Harbor, Navigator's Island, in distress.
Hosburg, (Br.) Huasco for England, totally lost at the entrance of the harbor of Valparaiso, June 29
St. Peter, sunk at her anchors, in Kangaroo Harbor.
Empire, N. Y. for Constantinople, grounded on the Cardiff sands, July 27.
Rainbow, Swansea for Havana, dragged ashore on Florida Reefs, Aug. 29.
Unknown, was seen ashore on the Tortugas.
Dorcas, Havana for Falmouth, put back, Sept. 13, leaking.
Infanta, found dismasted, waterlogged, and abandoned, Aug. 11.
Rainbow, Swansea for Havana, lost near Key Vaccas.

BRIGS.

Oxford, Havana for Halifax, lost anchor, cable, &c., put into Portland.
Patriot, Calais for Liverpool, N. S., lost on Brier Island, crew, cargo, &c., saved.
G. L. Abbott, Charleston for New-Orleans, was found to be on fire, 4 days out.
Gertrude, St. John's, N. B. for England, lost foremast and mainmast, by collision with ship Oliver Jordan.
Uranus, abandoned, seven feet water in her hold, and pumps choaked with coal.
Ada, Valparaiso for Sidney, put into Tahiti, June 25, leaking badly.
Philip Larabee, Savannah for Boston, was run into by a propeller.
Molenkus, Baltimore for St. John's, N. B., had mainsail and jib split, Aug. 30.
Velocity, Norfolk for Barbadoes, put into St. George, Bermuda, Aug. 26, leaking.
Roamer, Pictou for Fall River, lost jibboom, bowsprit, &c., in collision with unknown schooner.
Amelia, Boston for Pictou, wrecked near Prospect, Sept. 2, crew saved.
Argyle, Valparaiso for ——, put into Tahiti, leaking.
John R. Rhodes, Boston for Baltimore, damaged by collision with sch. America, Sept. 5.
Parthenon, New-Orleans for Mobile, went ashore on Grand Grozier, Sept. 2.
Webster, Port Richmond for Salem, Holmes' Hole, lost jibboom, fore-topsail, fore-topgallant mast, in collision with unknown sch. bound west, Sept. 10.
Unknown, (herm) ashore, Hedge Fence.
Isabella Benermann, Sagua for New-York, sprung trestletrees of the foremast and foreyard, in a gale, Sept. 6 and 7.
Huntress, San Juan de Nicaragua for Philadelphia, got ashore on Tea Table Key, Aug. 29, but was got off with little injury.
Ophir, New-York for ——, was in contact with a sch., lumber loaded, full of water, and abandoned.
Dover, from Punta Arenas, had sails split, &c., in a heavy squall.
Captain John, New-York for Aspinwall, sprung aleak, and returned to repair.
Arcturus, Philadelphia for Mobile, sunk S. E. of Cape Henlopen, crew saved, vessel total loss.

SCHOONERS.

Brave, was run into, Aug. 16, by an unknown sch., and much damaged.
Juliet, Calais for Providence, in contact with sch. R. T. Stockton.
Ashland, Boston for Wilmington, N. C., split sails, Aug. 30.
Medomack, Calais for Boston, totally lost on Fox Island, Sept. 5
Joseph Hewitt, lying at Port Ross, lost both anchors.
Elizabeth, Bangor for Boston, sprung aleak off Boar's Head, Aug. 27, towed into Newburyport.
Oregon, Jeremie for Boston, put into Inagua, Aug. 14, leaky.
A. R. Wetmore, St. Mary's, Ga., for Port Spain, put into Point Petre, June 11, leaky.
Eagle, Bucksport for ——, was ashore, and full of water.
Cordelia, Portsmouth, R. I., for Charlestown, Mass., ashore on Sivile Island.
Olive, Boston for Bangor, lost foremast, and put back, Aug. 27.
Elizabeth C. Felter, Arnold for Honduras, put back to Aspinwall, Aug. 9, foremast sprung.
Joseph Howe, Sidney, C. B., for New-York, totally lost off Black Man's Head, Port la Bear, Aug. 9.

Vermont, (sloop) Rondout for Bridgewater, Conn., sprung aleak, and was run ashore on Low Point, Aug. 20.
Kate Kinney, Little River, N. C., for New-York, totally lost.
Speed, Boston for Philadelphia, put into Holmes' Hole, leaky, having struck a rock.
Champion, Eleuthera for New-York, had been in collision with brig Arcadia.
S. S. Lewis, off Battery, struck by lightning, taking main-topmast clean off.
Aurora, Boston for Harrington, split sails, &c.
S. N. Smith, from Philadelphia, lost bowsprit, in collision with sch. George, Kentucky.
Frances C. Smith, Philadelphia for Providence, lost bowsprit, &c., in collision with sch. Ida Della Torre.
Abigail Gould, Haskell for Steuben, went ashore on Schoodac Island, total loss.
Melvina, Boston for Washington, lost bulwarks, stanchions, &c., in collision with brig Webster, Sept. 9.
N. B. Moore, New-Orleans for Mobile, lost mainsail, in a gale, Aug. 31.
T. Raymond, Boston for Philadelphia, had rigging carried away in collision with sch. Charles Parker, Sept. 9.
America, Yarmouth for New-Bedford, had bulwarks and stanchions carried away, by collision with brig John R. Rhodes.
W. M. Foster, Alexandria for Boston, lost, July 18, on the coast of New-Jersey.
Pacific, Galveston for New-York, dismasted Aug. 31, and put into S. W. Pass, for repairs.
Unknown, ashore on Ship Island.
Standard, from Mobile, put back, leaky, Sept. 3.
Robert Robinson, (Br.) found water-logged, off Grand Bank, Aug. 11, Captain and four men taken to Quebec.
Loo Choo, San Francisco for Scottsburg, Umpqua, &c., got ashore on the South Spit, July 15.
Georgia, Bangor for Newburyport, was run into off Portland, Sept. 9, carrying away jib, foresail and starting bulwarks.
William Henry, Rondout for New Haven, run into by unknown sch., which carried away bulwarks and forerigging.
William Mason, off pier 6, much damaged by fire, Sept. 11.
Ann, Bangor for Biddeford, in collision with unknown sch., lost both masts and bowsprit, Sept. 7.
Far West, from Tahiti, struck upon a reef, compelled to return and repair.
Northern Light, Digby, N. S., for Boston, lost head of foremast, off Cape Ann.
Tamoree, Philadelphia for Boston, in a fog, went ashore on Penney Island, Buzzard's Bay, Sept 23, but got off again, with loss of chain and anchor.
Alphonsine, Sabine Pass for New-Orleans, driven ashore on Tiger Point, Aug. 31.
Cicero, New-York for Aspinwall, went ashore, Aug. 27, on Burch's Lookout Reef, W. Caicos, and became a total loss.
Unknown, ashore on Lovell's Island, Aug. 16.

THE following letter came to hand too late to be placed in its appropriate place in the Nautical Department :

CHICAGO, September 19, 1855.

MESSRS. GRIFFITHS & BATES :

In the September number of the NAUTICAL MAGAZINE, I notice some extracts from a letter written by Wm. M. Ferry, Jr., with regard to the capsizing of the schooner *Magic*, on the 20th of June last, in which he says : "The Mate in charge of the deck was paying *profound* attention to his business, crew ditto, all fast asleep. A light breeze blowing, scarcely enough to call it a breeze." As near as I can learn the wind was fresh, about S. S. E., the vessel going about 8 or 9 knots, until within a few moments of the time when the squall struck her, from N. N. E. It struck light at first, and as her course was N. N. E., of course it struck her aback. The boom tackle was let go, and the helm being put up, she payed off sufficiently to fill her square sails, on the yards being braced up, which had been done when I got on deck, (having been awakened by the noise made by the main boom swinging over.)

In this situation, (having no way on her) the whole force of the squall struck her just as I reached the deck, and having all sail set, save her gaff topsail, (as Mr. F. says,) over she went. I have no reason to suppose that any of the watch were asleep. The mate says he was deceived by the appearance of the weather, the clouds rising up and breaking away overhead, and the breeze continuing fresh after her. Indeed several captains of vessels, who were out at the time, have since told me of the narrow escape they had from being caught in the same way. What I blame the mate for is, in *not calling* me, as I *directed him to do, if the weather looked bad.*

By publishing these facts you will do an act of simple justice to the mate and the seamen comprising the larboard watch, whom the letter of Mr. Ferry is calculated to injure, as well as myself. Expecting you to comply with this reasonable request, I remain, yours respectfully,

JAMES WINSKIP,
Master schooner Magic.

NOTICES TO MARINERS.

Signals for the Reefs.—Captain Archer has furnished the Key West correspondent of the *Savannah Daily Morning News* with an accurate list of the iron signals lately erected by Lieutenant James Totten, United States Coast Survey, upon the prominent reefs in that vicinity. The signals are all alike, with the exception of the distinguishing letter. They consist of a single pile running up to the height of 40 feet above the surface of the water—surmounted by a cylindrical cage or basket of open-work, and beneath which is a letter of the alphabet, swinging like a vane with the wind, and of sufficient size to be seen and read at a distance of ten miles, with a good glass. By reading the letter, the navigator at once knows his position, and can safely, with an accurate chart, take his departure. The following is a list of the signals, and their position with reference to the keys:—Sand Spit—12 miles east of Key West—signal letter A. American Shoal, —signal letter B. Alligator Reef, opposite Indian Key—signal letter C. Crocus Reef, opposite Plantation—signal letter D. Conch Reef, opposite Key Tavanier—signal letter E. Pickle Reef, opposite Roderigues Key—signal letter F. French Reef, opposite Mosquito Bank—signal letter G. Grecian Shoal, opposite old Sound Point—signal letter H. Elbow Reef, not yet up. Turtle Reef, opposite Angel Fish Creek—signal letter K. Pacific Reef, opposite near Cæsar's Creek——signal letter L. Ajax Reef, opposite upper end of do.—signal letter M. Long Reef, opposite upper end of do.—signal letter N. Triumph Reef, opposite Sand's Cut—signal letter O. Towery Rocks, opposite Soldier's Key—signal letter P.

The signal for Elbow Reef will be put down this fall. These signals will be of great assistance to navigators. They will rob the reef of half its dangers, and the wreckers of their spoils.

The light-vessel for the Cross Rip was towed to her station 16th inst., and the Brandywine relief light-vessel was taken back to New-Bedford 17th.

A letter from the Collector at Franklin, La., to the Collector at New-Orleans, states that the light-ship Atchafalaya, at Atchafalaya Bay, and the light ship Pleasanton, at the West end of Ship Island Shoals, broke from their moorings during the gale of 31st ult., and were driven ashore—the Atchafalaya near the Bayou Salle, and the Pleasonton on Shell Keys, 15 miles east of Vermilion light.

An agent of New-York Underwriters at Montevideo, advises, under date of July 10th, that a company has been formed under the patronage of the Government, to place a floating buoy on the English Bank Shoal, and a light-house near Maldana Shoal, and when finished, vessels will pay about 6½c. per ton inward; nothing outward—the company to receive the same for a term of years not stated.

Two pilot-boats have recently been established, to cruise off the island of Lobos, to supply inward-bound vessels with pilots for Montevideo, Buenos Ayres—vessels spoken by them are subjected to pay half pilotage on refusal to take a pilot.

Absecom Shoals.—An iron bell boat has been placed just outside the outer shoals, off Absecom Inlet. The boat lays in five fathoms of water, and 2 1-4 miles distant from South Point of Absecom Inlet. The following are the compass-bearings from the boat:

Absecom light-house, (unfinished) N. W. ½ N.
Absecom Inlet, N. W. by W.
Outer buoy of Absecom bar, N.
Course to clear Brigantine Shoals, N. E. by E.
The boat is painted red, and the bell rings by the action of the sea.

The government transport Pharos, from Philadelphia, had arrived at Key West, with materials for a light-house on the Collins patch. It is to be a first-class Fresnel-light, and the tower is to be erected the coming winter. The Pharos has also mechanics and laborers for a beacon on the Rebecca Shoal, to be erected as soon as the weather will permit.

Casket Lights.—The three light-houses on the Casket Rock, in the English Channel, have been raised in height about 25 feet each. Owing to this increase in height, the light may be discerned six or seven miles farther than was lately possible.

We learn semi-officially that a fourth order Lens apparatus, showing a fixed light varied by flashes each minute and a half, has been erected at Race Point light-house, by Wm. A. Williams, civil engineer, and was lighted August 30th.

Carthagena, Aug. 2.—The Asiatic cholera having appeared in various parts of the Province, the gates of the city are now closed by order of the Corporation, to the great prejudice of commerce. Three days' observation from England is still imposed, and on obtaining *pratique*, permission to enter the city is given, but on leaving it all communication with the city is at an end.

Buoys on Stillwagen's Bank, Entrance to Massachusetts Bay.—The following buoys have been placed on Stillwagen's Bank, at the entrance to Massachusetts Bay, to mark the approaches to Boston Harbor, viz :

A first class can buoy, painted red, in about eleven fathoms of water, N. W. by N., (true) six miles from Race Point light-house, and E. S. E., (true) 28 1-4 miles from Boston light-house.

A second class nun buoy, painted with white and black perpendicular stripes, in about fifteen fathoms of water, E. ½ S., (true) 26½ miles from Boston light-house.

A first class can buoy, painted black, in about fifteen fathoms water, E. by N., (true) 21 3-4 miles from Boston light-house.

North Coast of Spain—Fixed Light at Gijon.—Official information has been received at the office of the Light-house Board through the Department of State, that the Spanish government has given notice that on the 15th June last, 1855, a fixed light of the natural color would be exhibited in the vicinity of the Hermitage of Santa Catalina, near the entrance of the port of Gijon, in the province of Oviedo, on the North coast of Spain.

The height of the light is 170 feet above the level of the sea, and it will be visible from the deck of a ship from 10 to 12 miles in clear weather.

The position of the light tower is in latitude 43° 35′ 13″ north; longitude 5° 37′ 46″ west of Greenwich.

Discovery of a Rock in the Gulf Stream.—The United States Consul at Liverpool, England, in a letter dated August 10th, states that two days ago, Captain Tessier, of the ship Emily V. Pierre, of Charleston, arriving at the above named port from Charleston, informed him that he had seen a rock in the Gulf Stream which he did not think was laid down in any of the published charts. Considering the statement too important to receive verbally, the Consul requested the captain to furnish it in writing. It is as follows :—

" On Sunday, July 15, at about half-past five o'clock, I was called by the officer on duty to look at what he supposed to be a wreck at a short distance on the starboard bow. It proved to be a rock—a most dangerous one, too, lying, as it does, within the limits of the Gulf Stream, and in the track of ships bound to Europe or the Northern States from all the Gulf and Southern Atlantic ports of the United States. I took my glass in the mizzen-top, and the rock being but a short mile from the ship, I had an excellent opportunity of examining it. The wind was south-west and light, the sea very smooth, and the ship going about two and a-half knots through the water. The current of the Gulf meeting the obstruction formed a kind of overfall over the head of the rock, and left a wake in the direction of the stream, plainly discernible for a distance of two hundred yards. At short intervals the heavier swells uncovered the head of the rock, showing a surface (as near as I could judge) fifty feet in diameter, and covered with long sea-weed. It is a most dangerous rock, for, after a long spell of calm or light winds, the head being just awash, the first intimation a ship would receive of her proximity to the danger would be her striking upon it. On the other hand, the head being so small, would create, in heavy weather, but a comparatively small breaker, which might very easily (particularly at night) be taken for the comb of a wave. I was working my afternoon sights when called by the mate. The observation was a good one, and my chronometer being very exact, the position I assign to the danger cannot be more than one or two miles out of the way. We found, on the day in question, a current setting to the northeast at the rate of two and a-half miles per hour. On my chart of the North Atlantic, published by James Imray, in 1852, there is a rock laid down in the same latitude nearly, but forty-five miles further to the eastward. It is called the Orion rock, was seen in 1845, and is marked " doubtful." May not the rock I saw and Orion rock be one and the same.

The following is the position assigned to the rock :] [North latitude 35 deg. 14 min., West longitude 73 deg. 21 min.—*Herald. Sept.* 19.

Fenwick's Island Shoal. An iron bell-boat has been anchored off the middle of this shoal in 10 fathoms water—Fenwick's Island bearing by compass W. ½ S., distant 6½ miles. The boat lies close to the outer edge of the shoal, which is very steep, and runs N. E. and S. W. Vessels finding themselves unexpectedly in with the boat, should make Easting before shaping a course for the Delaware, or any northern port. The hull is painted black, the mast red. The bell rings by the action of the sea.

Tobermory, August 29.—A Sunken Rock—*Bark Kestrel*—To the Editor of the *Shipping and Mercantile Gazette* : Sir—I beg to forward to you an account of the total loss of the bark Kestrel, of Newcastle, under my command, on the 20th inst., at 6 o'clock, A. M., from Liverpool for Memel, laden with salt and cotton. At 2, A. M., on the 24th, I was off the Island of Rum, wind East, on my way towards the sound of Canna, blowing strong, wind in squalls, with rain. On nearing the Sound, between the islands of Rum and Canna, I found the wind and tide so much against us, as to make it impossible to work through. I immediately, to save time, and finding that my chart pointed out a fair channel to leeward, between Hamla and Canna, bore up for it, and while midway between the two, came to the ground on a sunken rock not laid down in my chart, nor mentioned in the " Direction Book." The very place where the ship struck pointed out 12

fathoms water. We had just time to get the boats out to save ourselves, which was fortunate, as it blew a hard gale shortly after we landed on Canna. The ship drifted over the reef, and disappeared in deep water. I have only one remark to make. I see by your valuable paper of the 24th, the day my accident occurred, that Captain Denham has been enabled to sweep away some fabulous reefs from our charts of the South Pacific, and make plans of many islands of the "Feejee Group." I sincerely trust that some of those gentlemen employed at home to survey, or the publishers of the charts, would insert some not at all "fabulous" reefs into our charts of the Hebrides and Lewis Island groups, and this reef in particular, which would have placed fourteen souls in the greatest jeopardy one hour later.—I am Sir, your obedient servant, JOHN LINDSAY. My chart is by J. W. Norrie. Additions up to 1852.

Notice is hereby given, that pursuant to the intentions expressed in an advertisement from this house, dated 30th May last, the following changes have taken place in the Prince's channel, viz :—

The Tongue light vessel has been moored about three-fourths of a mile to the northeastward, in ten fathoms, with the following marks and bearings :

Minister East Mills, on with the centre of the Coast Guard station, in Westgate Bay, S. by W. ½ W.

Margate Old Church, the apparent width of its tower, opened to the eastward of the Pier Lighthouse, south.

Shingles beacon, N. W. ¼ N. Northeast spit, S. E. ½ S.

N. B.—Mariners are cautioned always to pass to the northward of this light-vessel.

The northeast Tongue buoy has been moved about half a mile westward, into 4½ fathoms, with St. Peter's Church in line with Margate New Church, S. by E. ¼ E.

Monckton beacon, twice its apparent length, on the east end of Lower Hale Groove, S. W. by W. ¾ W.

North Tongue buoy, W. by N. ¾ N. Shingles beacon, N. E. by N.

The North Tongue buoy has been moved about one-fourth of a mile to the westward, into six fathoms, with the west end of Cleeve Wood, just open to the westward of Birchington West Mill, south.

Sarr Mill, twice its apparent length, open to the eastward of Margate Hook beacon, S. by W. ¾ W.

Northeast Pan Sand buoy, W. by N. ½ N. Girdler spit, N. by W. ¾ W.

The Girdler light vessel has been moved about one-eighth of a mile to the southward, into 3½ fathoms, with Ash Church spire, midway between George's farm and Reculvers, S. ¼ E.

West end of Cleeve Wood, open to the eastward of St. Nicholas Eastern Coast Guard station, S. by E. ¾ E.

Redding-street beacon, its apparent length open to the eastward of Northdown Tower, S. E. ¼ S.

Shivering Sand buoy, N. N. W. West Pan Sand buoy, S. by E. ½ E.

The following new buoys have also been placed in this vicinity, viz :

A chequered black and white buoy, marked "East Tongue," has been placed in 4 fathoms, with the following marks and bearings, viz :

The first house, next east of St. Nicholas Church, in line with St. Nicholas Western Coast Guard station, S. W. ¼ S.

Minister West Mill, in line with the west end of the east cliff of Westgate bay, S. by W. ¾ W.

West Tongue buoy, W. by N. ¼ N. Wedge buoy, W. by S. ½ S.

A red buoy, marked "West Girdler," in 2½ fathoms, with Ash Church spire just open to westward of Reculvers village, S. ¼ E.

West end of Cleeve Wood, open to the westward of Margate Hook beacon, the apparent length of the beacon, S. by E. ¾ E.

Shivering Sand buoy, N. N. W. ¾ W.

Girdler beacon and South Girdler buoy, in line E. S. E.

Note.—The foregoing bearings are all magnetic, and the depth those of low water spring tides.

NORTH PAN SAND BUOY.—It is intended that, on or about the 1st of October next, the black and white chequered buoy at this station shall be taken away and replaced by a buoy painted black.

By order.

J. HERBERT, Secretary.

TRINITY HOUSE, London, Aug. 9, 1855.

SOUTH COAST OF FRANCE, FIXED LIGHT AT MARSEILLES.—Official information has been received at the office of the Light-house Board, through the Department of State, that the French government has given notice, that on and after the 15th August next, 1855, a fixed red light will be exhibited on the tower recently erected on the southern head of the Mole of the Port de la Joliette, at Marseilles.

The light stands at an elevation of 81 feet above the level of the sea, and will be visible at a distance of 8 miles, in clear weather.

The tower is in lat. 43° 17′ 56″ North; long. 5° 21′ 26″ west of of Greenwich.

BELL-BOAT NEAR HARDING'S LEDGE, BOSTON HARBOR, MASS.—Notice is hereby given, that on or about the first of September next, the nun buoy now on Harding's Ledge, on the entrance to

Boston Harbor, will be removed, and an iron bell-boat, painted black, with the words "Harding's Ledge," in white letters, on both sides, will be placed in its stead.

The bell will be sounded by the action of the sea.

San Francisco Bar.—A large can buoy, with black and white perpendicular stripes, has been placed upon San Francisco Bar, in 6 fathoms water. The course from the buoy to enter the harbor, is to keep Fort Point and Alcatraz Island Light-Houses in range. Bearings and distances: to Fort Point, N. E. ½ E., magnetic, distant about 8¾ miles; to the telegraph at Point Lobos, E. N. E., magnetic, distant about 6 miles, and to Point Bonita Light-House, N. E. ½ N., magnetic, distant about 6 miles.

Southampton Shoal.—A third class can buoy, red, with even numbers, has been substituted for the spar buoy upon the S. W. Spit of Southampton Shoal, in 2½ fathoms water. Vessels bound up the Bay should leave the buoy on the starboard hand, and be sure to keep it open to the East of Yerba Buena Island, about a length. Bearings and distances: Point Blunt, S. by W., magnetic, distant about 3 miles; Point Campbell, S.W. by W., magnetic, distant about 2½ miles; Brooks's Island, N. E. by E., magnetic, distant about 3½ miles; Yerba Buena Island, S. E. by E., magnetic, distant about 7 miles, and Red Rock, N. W., magnetic, distant about 5½ miles.

Invincible Rock.—A third class can buoy, with red and black horizontal stripes, has been substituted for the spar buoy, in three fathoms water, on the north side of and about a half cable's length from the shoalest part of the rock. Vessels should not approach the buoy from any direction nearer than one cable's length. Bearings and distances: Point San Pedro, N. N. W. magnetic, distant about 3 miles: the brothers, N. E. ½ N., magnetic, distant about one mile; Point San Pablo, N. E. by N., magnetic, distant about 1½ miles; Point Castro, S. E. by E, magnetic, distant about 3 miles; Point San Quentin, S. W., magnetic, distant about 3 miles; Marvin Island, Prison Ship, W. ½ N., magnetic, distant about 2 miles; and Red Rock, S. E. by S., magnetic, distant about 2½ miles.

N. B.—On entering a harbor from seaward, buoys with black and white perpendicular stripes may be passed close on either hand. Buoys with red and black horizontal stripes are on obstructions, with channels on either side of them, and may be left on either hand in passing. Red buoys with even numbers, should be left on the starboard hand; black buoys with odd numbers, should be left on the port hand.

Fog-Gun at the Entrance to San Francisco Bay, California.—A twenty-four pounder gun has been placed on Point Bonita, north side of the entrance, and will be fired at half-hour intervals, (at the hours and half hours of San Francisco mean time,) during fogs, either night or day. The position of the gun is about five hundred and twenty-five feet north of the Light-House.

On or about the 15th Sept., the Stratford Shoals light-vessel was removed for repairs. Her place will be supplied temporarily by a light-vessel painted red, showing two fixed white lights, 44 feet above the level of the sea.

The light-ship on Ship Island, Texas, was blown from her moorings during a gale, night of 30th or day of 31st Aug., and nothing had been heard of her up to 2d Sept. It was supposed she had put to sea.

Fixed Light at Little River Harbor, Maine.—Notice is hereby given, that on the first day of January, 1856, the fixed light at Little River Harbor, Maine, will be discontinued, and that on that night, and during every night thereafter, there will be shown a fixed light varied by flashes. The illuminating apparatus is a lens of the fifth order of the system of Fresnel.

Capt. Hale, of Ship Ocean Queen, at Sydney, N. S. W., from New-York reports, lat. about 44° S., long. 51° 13′ E., weather very thick, and blowing hard from north-east, passed very near a rock 15 or 20 feet above water, and apparently 300 feet in length; saw large quantities of kelp and numerous birds in its vicinity. Sounded and could get no bottom in 100 fathoms. This rock is not known to be laid down in any chart.

The Cross Rip light-boat, as we learn from the *Nantucket Inquirer*, has been completely repaired under the superintendence of Lieut. Southwick, U. S. N. A new and powerful light has been substituted for the old one, which it is thought will be discernible at nearly double the distance.

Liverpool, Aug. 23.—A rock from 30 to 40 feet high, and about 250 yards long, running from S. W. to N. E., with the highest elevation N. E., was seen July 29, lat, 45° 20′ north, lon. 58° 4′ west, bearing S. S. W., distant three-quarters of a mile, by the Adriana, arrived here August 20, from St. John's, N. B.

The bell-boat which was anchored outside the bar, at the entrance to Mobile Bay, went adrift in the gale of the 30th ult. It is hoqed that in a few days she will be restored to her former position.

Scituate Light.—A fourth order Lens Light, illuminating 270 deg., has been placed in the lantern of the Light-house at Scituate, and was first lighted on the 22d inst.

The light boat of the Cross Rip station, which was repaired at Nantucket, was towed and moored on that station on the 16th instant, by steamer Eagle's Wing. The light-boat Brandywine, which had been supplying her place, was towed into New Bedford on the 17th.

Capt. Jackson, of the schr. Wizard, at Sydney, N. S. W., June 11th, from the South Sea Islands, reports having passed over a shoal that does not commonly appear in the charts of the South Seas. There was between 4 and 5 fathoms water, situated in lat. 19° 04′ south, and lon. 173° east. The accuracy of this observation may be trusted, as the chronometer with which it was taken had been tested since making the main land.

We find in the Wellington papers a letter from Capt. Henry Cory, late of the schooner Ariel, in which he mentions that a bank existing in lat. 49° 15′ south, long. 38° 8′ west, with soundings from 25 to 40 fathoms, had been reported to him by Capt. A. Baldwin, of the Carmen. Heavy breakers were seen upon the reef, which extends about 20 miles from north to south.

Sailing Directions for the River Min to Foo-chow-foo.

The best time for entering the river Minto is half flood to half ebb.

There are 15 feet on the outer bar, and 13 feet on the inner bar at low water spring tides, and at low water neaps 10 feet and 17 feet respectively.

When the north sands begin to dry there are barely 16 feet on the bar. At low water springs there are about 3 feet dry, at neaps they do not show.

In fine weather, the north and south breakers appear from half ebb to half flood; under similar circumstances the outer knoll seldom until after the last quarter; but in bad weather a line of breakers extends from the outer knoll right across to the North Bank, and a continuous line from the south breakers to Black Head.

The first of the flood tide comes in from the north-east, and setting with great velocity through numerous small channels and over the north banks, the great body of it (from Roe's Rock inside,) sets across the Sharp Peak entrance of the river straight for Round Island, gradually changing its direction for Hokeanga, as the tide rises. The first of the ebb comes from the direction of Round Island, and sets across the Sharp Peak entrance over the north banks; as the tide ebbs the stream takes the regular channel.

On Roe's Rock the strength of the ebb runs to the eastward until nearly low water, when it changes its direction to the south-east. The flood tide now coming in from the north-east returns the stream off to the southward, and near the knoll it runs strong to the S. S. W. for three hours, changing its direction to the westward as the tide rises; after half flood the stream sets in for Round Island and abates considerably in strength.

The channel north of the outer knoll (from the numerous patches) is not safe, and ought not to be attempted by large vessels.

To run for the south channel, the Southern Breakwater Rock, nearly in a line with the south part of the Middle Dog, is the mark generally used in cloudy weather by vessels frequenting the port. High Sharp Peak, open to the southward of Sharp Island Peak, is a good mark to lead in between the knoll and South Bank, until Triangle Head comes open off the small black rocks off Sand Peak Point, or until the North Breakers bear north; then haul up N. W. or N. N. W., according as ebb-flood is running, and, crossing the outer bar, gain the deep channel to the northward.

In passing to the north of the Nine Feet patch, the sharp shoulder should be well open to the northward of the Sharp Island Peak, before Sand Peak comes on with the middle of the Black Rocks off the point; if passing to the southward, the sharp shoulder should be kept a little to the southward before passing that line of bearing.

When Sand Peak appears well open to the right of the Black Rocks, sharp shoulder may be brought in order with sharp Island Peak, gradually opening the shoulder to the southward, as Serrated Peak comes on with S. E. tangent of Woufou, which now becomes the leading mark until the middle of Brother A. comes with the right high tangent of Brother B. Beacons are proposed to mark these spots, with which cross the bar, steering a mid-channel course when Round Island comes on with S. E. tangent of Wofou.

Small vessels turning in over the inner bar will find the following remarks useful; stand no nearer the north bank than Temple Point, in line with Sharp Peak; nor nearer the S. E. side of Hokeanga Bank, then to bring the right high tangent of Brother A. in the line with the left high tangent of brother B.

There is a good anchorage in 5½ fathoms stiff mud, outside the inner bar, with Brother B. in line (or a little open) of Sharp Peak Point, and Roe's Rock in line with Black Head.

Sharp Peak of Island kept open of Woga Point clears the Six Feet Rock off Temple Point; shut the Sharp peak in behind the high land of Woga, and you can go inside the Temple Point Rock.

In the N. E. monsoon the high land of Woga, in line, or a little open, with Temple Point, is a good line to anchor on; in the S. W. monsoon Woga creek is the best anchorage.

The Kinpai Pass is dangerous to strangers, particularly at or near the spring tides, for the current meeting the rocks with great force, cause eddies that occasionally run across the stream. With the flood a dangerous eddy extends from Kinpai Point in the direction of the ferry; and for this reason the passage north of the middle ground is considered the best.

After passing White Fort, close with the northern shore, it is very steep, and may be approached with safety. The apex of Pass Island, in line with White Fort tangent, is a near clearing mark for the shoulder of the middle; it is therefore recommended to shut Pass Island in altogether until past that point, opening it again immediately afterwards.

The danger of this passage is in passing the shoulder, which forms a sharp angle of the bank with only one foot at low water spring tides, and four fathoms close to; from this point to the opposite shore the distance is only 1¼ cable. After clearing this point, in passing either up or down, the tide tends rather to set you from the bank into the stream.

The high Serrated Peak, in line with ferry-house, leads through between the Middle and Quantao Shoal, and is a good line for ships to anchor when coming down the river, and waiting for an opportunity of dropping through the Pass.

The Tongue Shoal is steep, too, and has seven feet near its northern extremity. This part is cleared by keeping the ferry house midway between Kinpai bluff and the Tower, until the apex of Kowlooi Head comes on with the Half Tide Rock.

Between Half Tide Rock and Tintao, the bottom is very irregular. The Scout Rock is the end of a ledge projecting 25 yards from Couding Island, with 7 feet near its extremity. The Spiteful Rock shows at low water; it is part of a rocky ledge projecting about 30 yards from the island. To pass between the Spiteful Rock and Losing Spit do not shut Younoi Head with Flat Island until the black cliff head, marked by a white spot, comes in line with the north tangent of Twaisee Island. The Pagoda Rock is two feet dry at low water spring tides.

The best anchorage is from this rock for about a mile above it. Should this anchorage be full, I would recommend vessels to anchor pretty close to the south shoulder of Losing Island, where they will be out of the strength of the tide.

In dropping through the Mingan with the ebb tide it is necessary to guard against a dangerous eddy, setting from the point above Conding Island on the Scout Rock.

Although many of the above remarks will be unintelligible without reference to my late survey of the river, they are published in the hope that strangers proceeding to that place may pick out some useful information.

JOHN RICHARDS,
Of H. B. M. Surveyiug Brig Saracen.

Penalties if Goods are Relanded in the United States.—By the fourth section of the act of August 30, 1852, authorizing the exportation of merchandise in bond by certain routes to Mexico, it is provided that no goods, wares, or merchandise exported out of the limits of the United States, according to the provisions of that act, shall be voluntarily landed and brought into the United States; and that, if landed or brought into the United States, they shall be forfeited, and the same proceedings will be had for their condemnation and the distribution of the proceeds as in other cases of forfeiture of goods illegally imported; and all persons concerned in the voluntary landing or bringing such goods into the United States shall be liable to a penalty of four hundred dollars.

It will be necessary to maintain great vigilance along the frontier of the Rio Grande to prevent the illegal introduction of merchandise into the United States. In all cases of this description that are discovered, the full penalties of the law will be rigorously enforced.—*Wash. Union.*

LAUNCHES.

At Patchogue, L. I., schooner White Foam, 275 tons, for Providence and Baltimore line of packets.

At Medford, ship Sancho Panza, 850 tons.

At Black Rock, Conn., barque Courier, 400 tons, for Dunham & Dimon's line for Charleston.

At East Boston, packet ship Empress, 1,275 tons.

At City Point, S. Boston, Aug. 30, ship Mamaluke, 1,300 tons.

At Baltimore, brig Margaret A. Stevens, for West India and South American trade.

At Portsmouth, ship Othello, 900 tons, by Messrs. Tobey & Littlefield, Sept. 5.

At New-York, from Messrs. Smith & Dimon, steamship Fulton, 2,500 tons, Sept. 4, for mail steamers between New-York, Havre and Southampton.

At Rockland, barque Hanson Gregory, Aug 29.

At New-York, barque Zephyr, 650 tons, by the Westervelt Ship-Building Co., for the Mediterranean trade.

At Williamsburg, L. I., Sept. 10, by Lawrence & Foulks, ferry-boat Geo. Law.

At Mystic, Conn., by Irons & Grinnell, 2 brigs of 330 tons each, called the North and South.

At Chester, Sept. 12, ship Cicero, 1,100 tons, for the freighting business.

At Portsmouth, Sept. 22, ship Isaac H. Boardman, 1,500 tons, by Fernald & Pettigrew.

At Taunton, Sept. 22, schooner R. S Dean, 140 tons, 92 feet long, 23½ broad, 7 feet deep.

At Bath, Aug. 15, by Larrabee & Moses, ship Lawson, 597 tons.

At Newburg, Sept. 18, by Thomas S. Marvel, brig Antelope, 300 tons.

At Ellsworth, Me., Sept. 11, schooner Waltham, 185 tons, 84 feet keel, 25 feet beam, 9 ft. hold.

At Brooklyn, L. I., Aug. 27, schooner J. W. Hale, 200 tons.

At Hampton, Aug. 29, brig Ellington, 200 tons.

At Newburyport, Aug. 24, ship Lyra, 800 tons.

At Columbia, Me., Aug. 21, schooner Baltic, 141 tons.

At Columbia, Me., schooner Syloi, 102 tons.

At East Boston, about Sept. 1, ship Thomas Jefferson, 1,000 tons.

At Bath, Aug. 23, ship J. C. Parsons, 1,400 tons.

At Wrightsville sound, N. C., sch. Skipjack, 70 tons.

At New Bedford, Sept. 10, barque Marion, 328 tons.

At South Dartmouth, Sept. 11, barque Elliot C. Codwin, 280 tons.

At Essex, Mass., Sept. 11, barque of 400 tons, not named.

At Petty's Island, Sept. 8, barque David G. Wilson.

At Richmond, Sept. 8, barque Denis Kelly, 550 tons.

At Guilford, Conn., barque Mendi, 350 tons, for the Liberian trade.

At Rockland, Aug. 29, barque Hanson Gregory, 360 tons.

At Woolwich, Sept. 11, by Hawthorn, Gould & Co., ship Clara L. Preble, 850 tons.

At Green Point, L. I., by E. F. Williams, Aug 25, barque Clara Haxall, 473 tons.

At Green Point, L. I., by Eckford Webb, Sept. 8, sch. Wm. L. Burroughs, 3 masted.

At New-York, Sept. 5, by the Westervelt Ship-building Co., ship John J. Boyd, 1,300 tons, general freighting business.

At Maguadavic, N. B., Aug. 15, by H. E. Seely, barque Grace Mann, 700 tons.

At Cleveland, Ohio, Sept. 9, by Quayle & Martin, sch. Wm. G. Grant, 500 tons, 124 feet keel, 26 feet beam, 11 feet hold.

At Ellsworth, Sept. 11, by Jamison, a sch. of 185 tons, called the Waltham, owned in part by Messrs. Hale & Eaton, and by Captain George Clark, who will command her.

At New-York, by Rosevelt & Joyce, Sept. 22, a tern. sch. called the Maury, in honor of Lieut. Maury. She is owned by A. A. Low & Brothers.

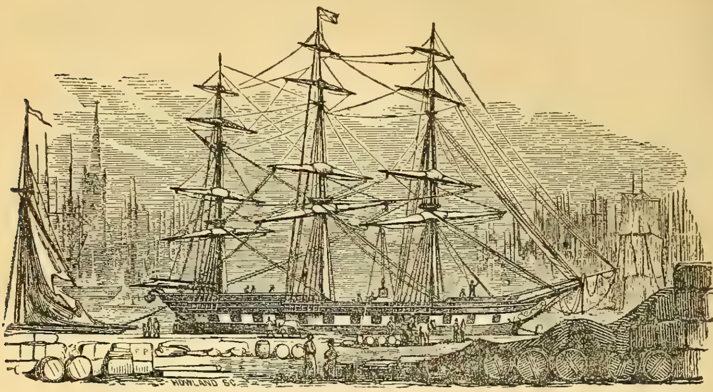
At Sing Sing, Sept. 27, by Messrs. I. C. Smith & Son, sch. C. H. Moller, of about 200 tons. She is designed for the coasting trade.

At Mystic, Conn., Sept. 18, by Messrs. Maxson, Fish & Co., a brig, name not given, of about 450 tons, owned by the builders, and Captain B. Burrows, Jr., who will command her. She is built expressly for Messrs. Brodie & Pettis's line of Packets between New-York and St. Marks.

At Searsport, recently, by Messrs. Nichols & Merrihew, barque Lucy D. Nichols, to be commanded by Captain D. Nichols, of Searsport.

At Medford, Sept. 21, by Messrs. Hayden & Cudworth, clipper ship Rival, of 1000 tons, owned by Messrs. Howes & Crawford, of Boston.

Commercial Department.



THE NEW-YORK AND NEW-FOUNDLAND TELEGRAPH COMPANY.

During the past month, the return of the steamer *James Adger*, announcing the loss of the cable while in the act of being laid across the Gulf of St. Lawrence, has for the present left the public mind in suspense, in relation to the Company's future course. This loss is much to be regretted by every progressive mind engaged in the advancement of science. To such it is indeed a personal loss, and furnishes a lesson which should not fall powerless upon the telegraphic department of the commercial world. That it was lost, is not to us in the least surprising, indeed it would have still more surprised us if it had not been lost, after having learned of the manner in which it was attempted to be laid. We were not in possession of any of the plans of operation for laying this cable; but it only requires an ordinary share of attention to discover that there was a great want of foresight in the matter, and that the Company pursued a most expensive, uncertain, and hazardous course. It is next to impossible to secure an extension in the line of its course, of so great a length and weight of cable, in a single section; for (as was the case) although there may be a surplus of several miles of length, yet it may (as it did) prove, that in consequence of irregularities, or of a curvature in the direction of its course, that it will be too short, as it proved to be, to reach the place of destination, in even an approximation to the length represented in the distance between the points to be connected by the cable.

Let the Company take courage; their lessons of experience may not be entirely lost, though dearly paid for. The cable should have been prepared in lengths of not more than five miles, with each end prepared for splicing, and with an eye spliced or turned, some 10 or 20 feet from each end, and in this manner, with one half of the cable on board of a screw-schooner, which can do her own steaming, and regulate her own speed, the work can be successfully accomplished in almost any part of the year.

In choosing a vessel for this service, one should be selected with an abundance of beam, and with a bottom so shaped as to prevent her from rolling; we presume that none could be found well adapted to the service. One of 300 tons burden would be quite sufficient in size to lay not only the cable across the Gulf of St. Lawrence; but to lay any section of a cable between Cape Race and Cape Clear, in crossing the Atlantic. With a suitable vessel, provided with the cable in sections, they can be laid singly, and spliced together as they are laid, and they can also be laid in line with the course, each length requiring but a few hours, and, when the weather forbid a continuance, the end could be dropped with a buoy-rope secured to the eye at the end of the cable, to a buoy with a flag-staff upon it; another buoy-rope should also be attached to the buoy, and to a kedge-anchor, to prevent the end of the cable being drifted away from its course, by the force of the wind and the sea on the buoy. The cable thus cared for, the vessel could provide for her own safety, by seeking a harbor, and waiting for favorable weather, when the work could be resumed by lifting the end of the cable with the anchor, and splicing on an additional length, and proceeding with the work. The operation of laying a cable across the Atlantic, will not differ materially from this, whenever commenced, with this exception, there may be 70 to 80 screw-vessels engaged in the service at the same time; and with this number, the work of laying the cable across the Atlantic may be accomplished in two or three days, most likely in one day, after the vessels arrive at their stations, in good weather, in the month of June or July; and the strongest probability is, that they would not be compelled to anchor the cable even in bad weather. We hope to see not only the Gulf of St. Lawrence crossed with the telegraphic cable, but the Atlantic, within the next ten years.

CHAMBER OF COMMERCE.

The regular monthly meeting of the Chamber of Commerce was held September 6th, at the Merchants' Bank, when there was a full attendance of the members, P. Ferris, Esq., President, in the chair. The minutes of the last meeting were read and approved, and the meeting went into the election of new members, when Captain J. N. French was unanimously elected.

Mr. Stephen Johnson was then appointed as a member of the Committee of Arbitration.

A letter from the Secretary of State was then presented and read. It enclosed a letter from the Chamber of Commerce at Bengal, suggesting the necessity of the adoption of measures for the facilitating of commercial intercourse. Ordered on file, and referred to the Committee on Correspondence.

A communication was also received from Mr. Boynton, relative to disasters on and losses of steamboats, recommending that the matter should be

brought before the commercial public. The letter enclosed a summary of the recent losses, the aggregate being, of lives 1,200, and in property, $7,000,000. After a lengthy debate the letter was referred to a select committee, viz:—Messrs. Arthur Leary, C. H. Marshall and Mortimer Livingston.

Mr. Brower then made some lengthy remarks as to the present system of lighterage, urging the necessity of the faithful discharge of duty by the Health Officer. The trade (he remarked) has grown up to be a serious monopoly, so that cotton cost eighty-one cents lighterage alone. He desired the non-interference of the Health Officer in the matter. He, in conclusion, submitted a resolution of inquiry, which was adopted, Messrs. P. Perrit, J. W. Brower, Wm. Nelson and C. L. Frost, being appointed the committee.

Several matters of no public importance were introduced, and the Board adjourned.

SALES OF VESSELS.

Ship Hudson, 368 tons, purchased at Fairhaven, to be employed in the whaling business.

Ship Rodriga, 587 tons, 7 years old, built of white oak, at auction, at Boston, for $25,000, one-half cash, remainder 4 and 5 months.

Steamer Enoch Train, 384 tons, at auction, at Boston, for $35,100.

Steamer Rescue, 230 tons, for $6,300, one-fourth cash, balance 4, 6 and 8 months.

Schooner Dolphin, 130 tons, 3 years old, built at Baltimore, at private terms.

Ship Potomac, 400 tons, built at Alexandria, Va., of live oak and locust, copper fastened, 17 years old, Simpson & Son purchasers.

Steamboat John Marshall, at auction, at New-York, Sept. 6, by W. S. Marshall, for $4,000 cash.

Steamtug Caroline, at San Francisco, to be used as tug-boat at Hong Kong.

Ship Benj. Howard, late of Boston, at London, and is under Danish flag.

Barque Alma, (new) 555 tons, built at Salisbury, Me., for East India trade, for $26,000 cash.

Two-thirds of brig Elvira, 131 tons, built at Pembroke, Me., at auction, at Boston, Sept. 3, for $2,000.

Propeller Gen. Knox, 1 year old, at auction, at Thomaston, to J. A. Creighton, for $16,300.

Schooner Spartacus, by Wm. McPherson, of Sidney, N. S. W., for £350, and re-named Mary Jane.

Ship Genoa, 550 tons, 7 years old, built at Bath, at New-York, to Messrs. W. H. Robson & Randall, for $17,000, cash, Sept. 10.

Ship Hellespont, (new) 908 tons, her name changed to J. L. Warner.

One-sixteenth of barque Zone, of Fairhaven, at New-Bedford, for $500.

Brig Francis P. Peck, 247 tons, at auction, at Boston, Aug. 30, for $2,000.

Ship Mechanics' Own, at New-Bedford, to a New-York house, for $21,000.

Barque Rhodes, 479 tons, 9 years old, built at Newburyport, for $9,000 cash.

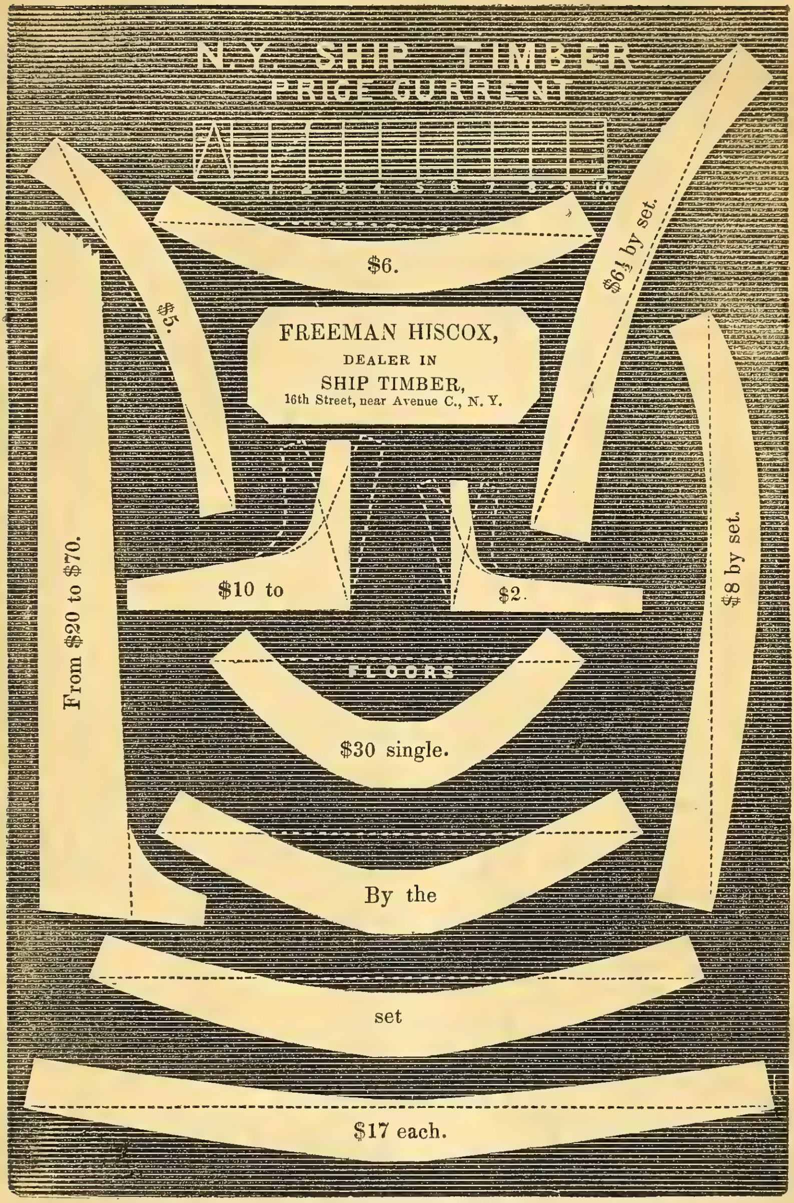
Brig Abby Taylor, 300 tons, 1 year old, built at Kennebunk, for $12,000.

Ship Dirigo, late of Bath, to parties in Boston, for $24,000.

One-sixteenth of barque Sarah Sheafe, of New-Bedford, at auction, to N. Taber, at the rate of $7,100.

Ship Tsar, of about 500 tons, built at Newburyport, Mass., 7 years old, for $21,000.

Steam Line between Boston and Halifax.—An arrangement has been made for a regular and frequent steam communication between Boston and Halifax. The steamship "Curlew" will be placed on this line at an early day. This arrangement will tend to relieve the Cunard steamships to and from Liverpool of the Halifax travel, thus enlarging their accommodations, and will otherwise prove a public convenience.



A set of floors and futtocks, $9 each. Oak Flitch, 35 cents per cubic foot; oak plank, $33½ to $38½ per M; deck plank, $35 per M.; hackmatack timber, 25 cents per cubic foot; chestnut, ditto; cedar, 35 to 40 cents; yellow pine timber, rough, $25 to $35; ditto, sawed, $30; yellow pine plank, $26 to $28 per M.

Knees—Oak, 5 inch $3 each; hackmatack, $1.50; oak knees, 6 inches, $5; hackmatack, $3; oak knees, 7 inches, $7; hackmatack, $4; oak knees, 8 inches, $10; hackmatack, $6; oak knees, 9 inches, $12; hackmatack, $7; oak knees, 10 inches, $15; hackmatack, $10; oak knees, 10 to 12 inches, $15 to $20; hackmatack, $11 to $12. Locust remains as last quoted.

Yellow metal, 25 cents, at 6 months; copper sheet, 28½ cents, ditto; copper bolts, 31 cents, ditto; composition nails, 19 cents, ditto.

LIST OF TARES ALLOWED BY LAW AND CUSTOM.

	By Law.	By Custom.
Almonds......in cases.	....	8 per cent.
Almonds.........casks.	....	15 "
Almonds...double bales.	....	8 lb. each
Almonds.........bales.	....	4 lb. "
Almonds.........frails.	....	10 per cent.
Almonds......ceroons.	....	10 "
Almonds.........bags.	....	4 "
Alum...........bags.	....	5 lb. each
Alum...........casks.	....	10 per cent.
Anvils..........casks.	....	90 lb. each
Bristles.........casks.	....	10 per cent.
Butter, weighing 80 to 100 lbs...kegs.	....	18 lb. each
Black Plate.......bxs.	....	8 lb. each
Candles..........bxs.	8 per cent.	....
Candy, Sugar....bxs.	10 "	....
Cheese......hampers.	10 "	....
Cheese.........bskts.	10 "	....
Cheese..........bxs.	20 "	....
Cheese..casks or tubs.	....	15 per cent.
Cassia...........bxs.	....	actual.
Cassia..........mats.	....	9 per cent. or 1½ lb. for 4 mats.
Chocolate........bxs.	10 per cent.	....
Coffee...........bags.	2 "	....
Coffee..........bales.	3 "	....
Coffee..........casks.	12 "	....
Coffee........ceroons.	....	6 per cent.
Coffee............bxs.	....	15 "
Cinnamon........bxs.	....	actual
Cinnamon.......bales.	....	6 per cent.
Cocoa...........bags.	1 per cent.	....
Cocoa..........casks.	10 "	....
Cocoa........ceroons.	....	8 per cent.
Cocoa..........bskts.	....	2 lb. each
Cloves,.........casks.	....	12 lb. each
Cloves...........bags.	...	4 lb. each
Cotton..........bales.	2 per cent.	....
Cotton........ceroons.	6 "	....
Composition Spikes or Nails......casks.	8 "	....
Copper.........casks.	8 "	....
Copperas........casks.	....	10 per cent.
Corks.....small bales.	....	5 lb. each
Corks.....large bales.	....	8 lb. each
Corks....double bales.	....	16 lb. each
Cordage, Twine...bxs.	....	15 per cent.
Cordage, Twine..casks.	12 per cent.	....
Cordage, Twine.bales.	3 "	....
Currants........casks.	....	12 per cent.
Currants.........bxs.	....	10 "
Figs.............bxs.	....	10 "
Figs...........mats.	....	4 "
Figs...........frails.	....	4 "
Figs..........drums.	....	8 "
Figs...........casks.	....	12 "
Fish, Dry.......casks.	....	12 "
Fish, Dry.........bxs.	....	12 "
Flax.........bobbins.	....	3 to 3½ lb.ea.
Gunpowder.....casks.	....	23 lb. each
Gunpowder...½ casks.	....	9 lb. each
Gunpowder..¼ casks.	....	5 "
Glue.............bxs.	....	15 per cent.
Glue............casks.	....	20 "
Glue, f'm Canton, bxs.	....	11 "
Hemp, Manilla..bales.	....	6 lb. each
Hemp, Hamburg, Leghorn, Trieste..bales.	....	7½ "
Indigo.........cases.	....	15 per cent.
Indigo...........bbls.	12 per cent.	....
Indigo....other casks.	15 "	....
Indigo.......ceroons.	10 "	....
Indigo..........bags.	3 "	....
Indigo..........mats.	3 "	....
Iron, Sheet.......bxs.	....	8 per cent.
Iron, Hoop........bxs.	....	8 per cent.
Iron, Rus.Sheet.packs.	....	14 to 28 lb. ea.
Jalap....yellow mats	....	12 lb. each
Lead, Pigs, Bars, Sheets.......casks.	....	3 per cent.
Lead, Wh. in oil.kegs.	....	8 "
Lead Wh.in oil.hhds.*	....	100 lb. each
Lead, White, dry..csks.	....	6 per cent.
Lead, Red, dry...csks.	....	6 "
Lead, Red, in oil casks.	....	10 "
Lead, Shot......casks.	....	3 "
Nails..........casks.	8 per cent.	....
Nails...........bags.	....	3 per cent.
Ochre, dry.....casks.	....	10 "
Ochre, in oil....casks.	....	12 "
Paris White....casks.	....	10 "
Pepper.........casks.	12 per cent.	....
Pepper.........bales.	5 "	....
Pepper..........bags.	2 "	....
Pepper...double bags.	....	4 lb. each
Pimento........casks.	16 per cent.	....
Pimento........bags.	3 "	....
Plums...........bxs.	....	8 per cent
Plums.........casks.	....	12 "
Prunes...........bxs.	....	8 "
Paper..........bales.	....	5,6,7,& 8 lb.ea.
Rasins..........jars.	....	18 lb. each
Rasins...........bxs.	....	15 per cent.
Rasins.........casks.	....	12 "
Rasins.........frails.	....	4 "
Rasins........drums.	....	10 "
Rice...........casks.	....	10 "
Salts, Glauber..casks.	8 per cent.	....
Salts, Epsom...casks.	....	11 per cent.
Segars............bxs.	18 per cent.	....
Segars.........casks.	18 "	....
Shot...........casks.	3 "	....
Snuff..........casks.	....	12 per cent.
Snuff............bxs.	....	15 "
Soap.............bxs.	10 per cent.	....
Sp., Brown, dry.casks.	....	12 per cent.
Sp. Brown, in oil casks.	....	12 "

* Extra allowance for hogsheads.

	By Law.	By Custom.
Spikes.........casks.	....	8 per cent.
Spikes..........bags.	....	3 "
Steel..........casks.	....	8 "
Steel..........cases.	....	8 "
Steel...........bdls.	....	3 "
Steel, from Trieste, in large size....bxs.	....	11 lb. each
Steel, from Trieste, in second size..bxs.	....	10¾ "
Sheet Iron.....casks.	....	15 "
Sugar, Candy.....bxs.	10 per cent.	....
Sugar, Candy....tubs.	....	15 per cent.
Sugar...........bags.	5 per cent.	....
Sugar ....bxs.	15 "	....
Sugar..........casks.	12 "	....
Sugar...........mats.	5 "	....
Sugar........ceroons.	....	8 per cent.
Sugar.......canisters.	....	40 lb. each
Starch, from Bremen, weight 62 lb. ech.bx.	....	13 "
Tallow.........bales.	....	8 per cent.
Tallow.........casks.	....	12 "
Tallow........ceroons.	....	8 per cent.
Tallow..........tubs.	....	15
Tea, Bohea .. chests.	....	22 lb. each.
Tea, Green, (70 lb. and over)......bxs.	20 lb. each	....
Tea, other (between 50 and 70 lb...bxs.	18 "	....
Tea, other, (of 80 lb.)........bxs.	20 "	....
Tea, other (over 80 lb..........bxs.	22 "	....
Tobacco, Leaf..bales.	....	8 lb. each
Tobacco, Leaf, with extra cover...bales.	....	10 "
Tobacco, Leaf....bxs.	....	15 per cent.
Twine.........casks.	12 per cent.	....
Twine............bxs.	....	15 per cent.
Twine..........bales.	3 per cent.	....
Whiting........casks.	....	10 per cent.
Wire...........casks.	....	8 "
Wool...........bales.	....	3 "

PILOTAGE.

FEES FOR PILOTAGE AT THE PORT OF NEW-YORK.

Sandy Hook.

Fees for Inward Pilotage.—For every vessel drawing less than 14 feet water, per foot, $2 44 ; 14, and less than 18, $3 06 ; 18, and less than 21 feet, $3 69; 21, and upwards, $4 31 per foot; for every armed vessel, $5. If boarded out of sight of Sandy Hook Light-house, one fourth of the above rates added. From November 1st to April 1st, four dollars are added to the full pilotage of every vessel.

For Outward Pilotage.—For every vessel drawing less than 14 feet water, per foot, $1 81 ; 14 and less than 18 feet, $2 12½; 18, and less than 21 feet, $2 75; 21 feet and upwards, $3 18¾ per foot—for every day's detention, $3.

New-Jersey.

Pilot fees the same as Sandy Hook pilots.

Hurl-Gate Pilotage.

Fees.—From or to Sands' Point, for schooners or sloops, per foot, $1 50; square rigged vessels, $1 75. From or to Hurl-Gate, for schooners or sloops, $1 ; square rigged vessels, $1 25. From the 1st of November to the 1st of April, in addition to the above, for every ship, bark, or brig, $2; for every sloop or schooner, $1.

Transportation.

For Transportation from North to East River, and Vice-versa.—A ship of the line, $20 ; a frigate, $15 ; a sloop-of-war, $10. All merchant vessels, $5. From Quarantine, one quarter of the inward pilotage, exclusive of the off shore. Hauling into the river from the wharf, $3.

Pilot boats holding commissions are numbered and designated by a square burgee, with white centre and blue border, the number being in the centre.

From the New-Bedford Mercury, Sept. 25.

A WHALING VESSEL IN THE ICE

Ship *Congress*, Captain Bartlett, which sailed from this port July 25th, on a whaling voyage to Northumberland Inlet, Davis' Straits, expecting to pursue the fishery there during a season of about two months, and then either to be frozen in, or to go south after sperm whales and return north in the spring, arrived at this port this morning, having met with an untoward accident. We learn the following particulars of the voyage from Captain Bartlett and his officers:

The first ice was seen on the 20th of August, in latitude 61 North, longitude 56 West. On the 25th, they made the south end of Cumberland Island; on the 27th, latitude 64, longitude 62.50, they saw land bearing from west to north by east. There was a thick fog prevailing during the day, and ice in all directions; light sails were taken in, and the ship was hove back to avoid the ice. On the 28th, it lighted up a little at day-light, and a boat-steerer was stationed upon the try-works as a lookout. The ship was under whole topsails, and going at about 3½ knots per hour, when the lookout gave the signal to keep clear of a cake of ice which was drifting towards them, but the ship was so near that it was impossible to avoid it, and she struck the ice on the larboard bow, staving in three planks and four timbers, together with the ceiling, leaving an aperture about four feet in length by three in width, causing the ship nearly to sink. Both pumps were started as soon as possible, and after ten minutes, thirty inches of water were found in the hold. Not finding it possible to free the ship by the pumps, threw overboard shooks, coal, wood, and everything forward of the fore hatch. In twenty minutes after the ship struck, forty inches of water in the hold. After lightening the ship for three hours and tipping her by the stern, they succeeded in getting the broken planks partly out of the water, and in four hours the vessel was free from water. In the morning, when the *Congress* struck, there was a heavy swell from the southwest, which continued through the day. At night she drew 18 feet of water aft and 10 feet forward.

On the 29th, the timbers were cut away inside, and they succeeded in getting some canvas and boards over the hole, and staunchions to keep them in place, and prevent the sea from coming in. The next day, a canvas mat was drawn over the aperture on the outside, and the ship was kept before the wind, it being east, with the hope of finding land as soon as possible. The ensuing two days, August 31 and September 1, they experienced a very heavy gale from the N. N. E., during which the ship labored hard, and leaked from 400 to 500 strokes per hour. On the 3d of September, the *Congress* made land, and came to anchor at Hopedale, on the coast of Labrador, latitude 55.30, longitude 60. They remained there two days, during which the ship was heeled, and repairs made. On the 7th they started for home, the ship leaking about 50 strokes per hour on the passage.

Mr. Smith, the 2d officer, was the only man aboard who had ever been on these grounds before. He was there last season in a New London vessel, which made a very successful voyage. He thinks that if this accident had not occurred, the *Congress* would have found plenty of whales. He informs us that he never saw so much ice there before; the shores were lined for 15 or 20 miles out to sea, with solid packed ice, which had been driven in by the southerly winds that had been prevailing for a few days previous. The ship, at the time she struck, was laying off and on, waiting for the wind to shift and clear the ice away, they being but about thirty miles from the entrance to Northumberland Inlet.

The *Congress* is the first ship that has been sent to these regions from this port. Several New London vessels have been sent there within the past few years, and have made good voyages. The *Congress* saw no whales, not having passed through the Inlet to the whaling grounds.

A LARGE shipping house in Wall-street, says the Newburyport *Herald*, has just closed a contract with one of our prominent ship-builders, for four first-class ships, of 1,200 tons each, half clippers, at $75 dollars per ton, or $90,000 each, which is an advance, as established by recent sales. This will give plenty of work this winter to ship-carpenters.

Naval Department.

PROLOGUE.

Various attempts have been made by naval men, in the United States, to sustain journals devoted to the interests of the U. S. Navy. But as one of the first objects of every author, whether in Journalism or book-making, is to interest the reader, it is nothing strange that if the number of readers who are interested in the subjects treated is small—no abilities of editorship can ever be sustained. This is believed to be the case with papers which have been offered for patronage to the officers of our Navy. They are not loath in their patronage of literature, and most especially in whatever pertains to the duties of their calling. They have liberally subscribed to all attempts at Naval periodical literature; but their number is not sufficient to support a paper exclusively devoted to their interests. It is with this view that the proprietors of the Nautical Magazine, having established a footing on a broader foundation, now presume to embrace the interests of the Naval Service as appropriate to their object in covering the whole range of nautical affairs; and since, from the highest quarters, our interests are united, in the temporary appointment of one of the most distinguished constructors in the Merchants' Marine, to build what bids fair to be the most eminent ship in the Navy—the "Niagara," we trust that our presumption is well founded.

We shall endeavor, in Naval matters, to be governed by the same principles which have thus far characterized our pages, to render unto all the just meed of merit, as well when successful as when struggling with unfavorable circumstances. We shall not, however, be any apologists for the precedence of the *customs of the service*. It will be our object to truthfully journalize present occurrences; and whenever apropos, to recall the noble achievements of those who have won for our flag its proud distinction.

Naval literature, whether in books or miscellany, will, at all times, command our attention; and the Navy, in all its gradations, is welcome to our pages. To *scraps of yarn* we shall always keep a corner, from which we shall, from time to time, cull out and spin whatever we may deem worth weaving. We shall try to be independent in our principles and actions, and shall assign him the highest rank who most distinguishes himself in the progress of his profession.

Such are the motives and principles by which we shall be guided, and we faithfully trust that by the conscientious discharge of them, we shall have now commenced our labors.

The printers had too far advanced with the contents of this number of the Magazine, to admit of that correctness of appropriation to the Naval Department which we shall hereafter pursue.

THE WAR.

At the bombardment of Sweaborg, the huge old arsenals and magazines which the Swedes laid the foundation of more than a hundred years ago, before Finland became part of Russia, were ignited by fire vertically thrown from over thirty gun-boats with mortars, which, in less than fifty hours, reduced all the important works of the place, *except the batteries,* to ashes. Behind a long line of granite walls, making a chain of seven islands, *not burnt,* the Russians claim to have 1,300 guns ready for use over the now plain of ashes, whenever the "annihilation" of the *Times* begins to be made good.

The battle of the Traktir is, however, a decided victory for the Allies. The damage to the Russian works is great, besides over 10,000 killed, wounded and missing. 55,000 infantry, and 6,000 cavalry, all newly arrived, and for the first time brought to face the enemy by Gortschakoff in person, fought desperately, but the Allies were too many guns for them, and they fell back by thousands to rise no more, but by tens of thousands for reanimation, by fresh reinforcements from behind the fortress of everlasting snows, which constitutes Russia's imperishable wall of defence. Gen. Pelissier is blamed for not pursuing them; but if the fault-finders will reflect on the necessity of his having to twice pass by permanently placed batteries on the heights beyond the river, with only about half the number of the retreating party, they will probably conclude that had they been in his place, they would not have acted differently.

The Allies now have 150 new mortars in position before Sebastopol, and the advances jam to the Malakoff. The last success which they report is, that they have captured some ambuscades on the *glacis* of the enemy's works—pretty close quarters—and judging from the care which they are taking by sapping and mining to find out whether they are likely to be blown up with it,—closer than they are yet willing to risk by assault.

While the Emperor Napoleon "knows from reliable sources that the Russian army cannot winter again in the Crimea," immense quantities of winter clothing on the way from England, indicates that the Allies are preparing to do so comfortably.

The Allies maintain full possession of the Sea of Azoff, and are *progressing in Turkey* by building a railway from Constantinople to Belgrade.

P. S. The Fall of Sebastopol. Since going to press, the arrivals of the "*Washington*" and "*America*" announce and confirm *the destruction of the town, fleet and fortifications, by the Russians. Thirty thousand Russians, French and English, hors de combat!*

THE FLOATING BATTERIES.

The Floating Batteries, *Glutton* and *Meteor*, will neither sail, steam, stay nor steer with satisfaction or dependence; and as quarters for a healthy ship's company, they are certain hot-beds for fever, sickness or suffocation. Men employed in the magazines of these ships, after working a short time, have been hauled up senseless, the state of the atmosphere therein being shown by the fact that a candle-light has been extinguished by the overpowering foulness of the air; the generation of unwholesome gases, from bilge-water and other noxious causes, is fearful; a tumbler of pure water placed between decks, becomes, in a very short time, very perceptibly impregnated. The dock-yard chemist has been investigating these dangerous defects in these vessels, with a view to some remedy; but that remedy we think lies beyond *his* reach.—Ventilation is the only remedy that can do the crews any good, and this can only be obtained by the utter metamorphosis of the ships. They have no keels; and what is to prevent them from topling over when they get their batteries on board, we cannot see.—*Hampshire Advertiser.*

THE ACT TO PROMOTE THE EFFICIENCY OF THE NAVY.

VACANCIES, RESERVE-LIST, AND PROMOTIONS.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That as soon as practicable after the passage of this act, the President of the United States shall cause a board of naval officers to be assembled, to consist of five captains, five commanders, and five lieutenants, which board, under such regulations as the Secretary of the Navy may prescribe, shall make a careful examination into the efficiency of the officers of the grades hereinafter mentioned, and shall report to the Secretary of the Navy the names and rank of all officers of the said grades who, in the judgment of said board, shall be incapable of performing promptly and efficiently all their duty both ashore and afloat; and whenever said board shall believe that said incompetency has arisen from any cause implying sufficient blame on the part of the officer to justify it, they shall recommend that his name be stricken altogether from the rolls. Vacancies occurring in said board, shall be filled by the Secretary of the Navy, who shall preserve the number and grades of its officers, as aforesaid: Provided, That no officers upon said board shall examine into or report upon the efficiency of officers of a grade above them.

Sec. 2. And be it further enacted, That all officers who shall be found by the said board incapable of performing the duties of their respective offices, ranks or grades, shall, if such finding be approved by the President, be dropped from the rolls, or placed, in the order of their rank and seniority at the time, upon a list in the Navy Register, to be entitled the "Reserved

List," and those so placed on the reserved list shall receive the leave of absence pay, or the furlough pay, to which they may be entitled when so placed, according to the report of the board and approval of the President, and shall be ineligible to further promotion, but shall be subject to the orders of the Navy Department at all times for duty ; and vacancies created in the active service list by placing officers on the reserved list, shall be filled by regular promotion in the order of rank or seniority. And officers who may be promoted to fill the vacancies created by the reserved list, shall, while unemployed, receive only the " leave of absence" or " waiting orders" pay to which they would have been entitled, if such promotion had not been made ; but when employed at sea, or on other duty, they shall receive, in addition to such " leave of absence" or "waiting orders" pay, the difference between the " waiting orders" or " leave of absence" pay, and the lowest sea-service pay of the grade to which they may be so promoted : Provided, That this scrutiny and reservation of officers shall extend only to the grades of captain, commander, lieutenant, master, and passed midshipmen : And provided, further, That all vacancies occurring in the grade of masters, shall be filled by the promotion of the senior passed midshipmen, to be entitled masters in the line of promotion, who, when promoted, shall receive the pay allowed by law to masters ; that the number of masters in the line of promotion, shall not exceed sixty, and that nothing in this act contained shall be held or construed to authorize any increase of the aggregate pay of the said grades, or of the naval service, as now allowed by law.

Sec. 3. And be it further enacted, That nothing in this act contained shall be construed to restrict, apply to, or impair the regular promotion of officers in the service list of the navy who may be at any time entitled to promotion, consequent upon death, dismissals, or resignations in the naval service, nor in any manner to abridge or impair the right of the Secretary of the Navy to place any officers upon furlough.

Sec. 4. And be it further enacted, That nothing in this act shall be so construed as to increase the aggregate number of officers, and that all laws, or clauses of laws, so far as they conflict with the provisions of this act, are hereby repealed.

Approved, February 28, 1855.

The Board of Officers assembled and *ordered* to make selections out of over seven hundred officers, in compliance with the provisions of the above Act, have reported the following as "*incapable of performing promptly and efficiently all their duty both ashore and afloat,*"—and the PRESIDENT having approved of their Report, the same has become a law.

RESERVE LIST.

ON LEAVE.

ON LEAVE.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Captains—				
Charles Stewart	56	10	22	11
Stephen Cassin	54	10	11	4
George C. Reid	50	9	23	11
T. Ap. Catesby Jones	49	1	19	2
David Connor	45	11	15	3
John D. Sloat	54	10	17	5
Charles W. Skinner	45	11	14	7
Joseph Smith	45	11	12	16
David Geisenger	45	1	19	
Wm. D. Saltar	45	1	18	7
John Percival	45	9	17	5
Wm. Taylor	41	8	10	
Charles Boarman	43	6	12	7
Wm. Jamesson	43	4	13	2
Henry W. Ogden	43	4	16	6
Hugh N. Page	43	4	20	3
Stephen Champlin	42	7	6	
Commanders—				
John J. Young	43		8	2
Joseph R. Jervis	42	6	12	10
Wm. M. Armstrong	40	1	16	7
Wm. F. Shields	40	11	17	0
Edw. W. Carpender	41	6	17	2
John L. Saunders	45	1	14	11
John Stone Paine	41	1	17	4
James Glinn	39	9	17	3
Joseph Myers	40	0	16	6
Robert Ritchie	40	11	15	7
Elisha Peck	38	0	19	5
Timothy G. Benham	40	1	15	0
Oscar Bullus	37	2	13	1
Cadwalader Ringold	35	9	18	4
T. Darrah Shaw	34	7	13	7
Robert D. Thorburn	34	9	16	0
Samuel Lockwood	30	5	14	10
Lloyd B. Newell	34	7	10	1
John Manning	34	7	15	2
John Colhoun	33	11	14	1
Amasa Paine	32	8	14	2
Lieutenants—				
Jonathan Swift	31	4	8	2
Jonathan D. Ferris	45	10	7	6
Matthew F. Maury	28	11	9	8
James S. Palmer	30	0	12	2
George Hurst	—	—	—	—
James F. Miller	28	2	11	6
Henry Darcantel	28	9	13	7
George M. White	26	2	14	10
George L. Seldon	26	9	13	7
Stephen Decatur	25	9	7	7
Richard L. Love	23	4	15	0
Wm. Reynolds	23	1	13	0
James B. Lewis	23	9	11	0
John Hall	22	11	10	9
Francis Lowry	23	4	9	9
Melancton B. Woolsey	22	3	13	0
Masters in the Line of Promotion—				
Wm. W. Low	13	9	10	10
Masters not in the Line of Promotion—				
Robert Knox	42	5	0	0
Wm. Vaughan	42	4	2	9
Francis Mallaby	41	5	4	5
James Ferguson	40	7	8	3
John Robinson	39	1	5	7
John Quin	38	2	3	7
Fred. W. Moores	27	7	8	5
H. A. F. Young	25	7	0	0
Charles V. Morris	12	5	0	0
Wm. N. Brady	11	6	0	0

ON LEAVE.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Samuel C. Reid	11	5	0	0
John Pearson	10	6	0	0
Edmund F. Olmstead	11	6	0	0

ON FURLOUGH.

ON FURLOUGH.	Yr.	M.	Yr.	M.
Captains—				
Jesse Wilkinson	49	5	15	8
Foxhall A. Parker	47	0	20	11
Philip F. Voorhees	45	1	21	5
Thomas M. Newell	41	3	7	5
Thomas Paine	42	2	8	10
Joseph Smoot	45	1	19	11
Benjamin Page	44	0	11	0
Wm. K. Latimer	45	1	20	0
Henry Henry	42	6	8	1
John H. Graham	42	6	3	0
Wm. Inman	43	0	17	8
Lewis E. Simonds	43	0	12	10
Hanson B. Cocke	42	6	16	4
Horace B. Sawyer	42	6	9	0
Commanders—				
Charles T. Platt	42	6	13	4
Thomas R. Gedney	39	9	22	3
Henry Bruce	41	1	15	1
John S. Nicholas	39	6	16	11
Thomas I. Manning	38	0	13	10
Andrew K. Long	36	2	17	5
Wm. Green	37	0	13	10
Charles H. Jackson	36	9	12	7
George Adams	37	0	12	2
Isaac S. Sterrett	35	9	17	6
Frederic A. Neville	34	7	15	2
Murray Mason	31	1	11	10
Lieutenants—				
Frank Ellery	43	0	14	0
James M. Watson	31	11	27	0
Junius J. Boyle	31	0	17	4
Wm. E. Hunt	31	2	14	3
Peter Turner	31	9	15	8
Wm. D. Porter	32	0	10	10
Gabriel G. Williamson	30	6	12	8
John C. Carter	30	0	16	8
Simon Bissell	29	10	13	5
John J. Glasson	31	11	16	6
Henry A. Steele	28	2	11	9
Robert Handy	28	11	15	2
A. H. Kilty	33	5	15	7
Wm. Chandler	28	5	12	11
James M. Gillis	27	10	4	7
Alexander Gibson	22	6	17	3
Bushrod W. Hunter	27	2	10	2
George R. Gray	28	2	16	7
Bernard J. Moeller	27	9	9	7
Henry Walke	27	11	13	6
John P. Parker	26	9	7	2
Montgomery Lewis	26	2	16	7
Albert A. Holcomb	26	9	15	2
Richard Forrest	26	2	15	9
Henry C. Flag	26	9	12	6
Edward C. Bowers	25	10	10	3
Dominic Lynch	25	2	16	8
Horace N. Harrison	26	9	13	5
Charles Thomas	25	10	10	4
Augustus Baldwin	25	10	10	10
Wm. B. Whiting	25	10	11	2
Charles Hunter	23	8	11	3
Samuel R. Knox	25	9	16	6
Lewis C. Sartori	24	10	12	3

ON FURLOUGH.

	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Fabius Stanly	23	0	15	7
John N. Maffitt	22	10	17	2
James A. Doyle	22	11	12	8
Matthias C Marin	22	11	9	10
Alexander Murray	19	4	10	11
Robert B. Reill	19	3	8	0
Matthew C. Perry	19	6	13	5
Van R. Morgan	18	0	10	3
Henry Rolando	18	0	13	10
John S. Taylor	18	0	14	2
Foxhall A. Parker	17	9	11	7
John F. Abbott	17	0	6	10
Wm. B. Fitzgerald	19	11	9	10
Maurice Simons	15	0	9	8
Robert McAran	—	—	—	—
Passed Midshipmen—				
Samuel Pearce	18	0	5	4
Edward C. Grafton	13	2	5	8
Masters not in the Line of Promotion—				
A. Cunningham	29	1	0	0
Michael Clear	15	0	0	0
R. C. Jones	10	8	0	0

DROPPED.

	Yr.	M.	Yr.	M.
Captains—				
John P. Zantzinger	45	1	15	1
Uriah P. Levy	42	2	12	8
Wm. Ramsey	43	4	13	5
Commanders—				
Frederic Varnum	42	6	10	5
Samuel W. Lecompte	42	6	11	7
Thomas Petigru	43	0	17	9
John S. Chauncey	43	0	17	2
Zach. F. Johnston	36	8	16	0
Wm S. Ogden	34	5	14	10
Lieutenants—				
Wm. A. C. Farragut	45	11	6	11
Hillary H. Rhodes	34	7	14	1
Law Pennington	32	1	16	8
Wm. H. Noland	31	0	11	5
James Noble	30	7	14	1
J. T. McDonough	28	9	7	6
Richard W. Meade	28	9	13	6
John L. Ring	26	9	15	2
Daniel F. Dulany	26	9	13	0
John J. B. Walbach	27	11	14	4
L. B. Avery	23	0	16	6
Thomas Brownell	14	2	0	0
Wash. A. Bartlett	21	11	12	11
A. Davis Harrell	20	11	12	10
S. Chase Barney	19	6	8	9
Thomas H. Stevens	18	0	9	9
Israel C. Wait	18	0	12	5
Abner Read	15	10	10	2
Alex. Rhind	16	4	11	10
Masters in the Line of Promotion—				
Julius S Bohrer	16	0	8	7
John Walcutt	14	10	11	0
John Madigan	14	10	13	0
George A. Stevens	14	7	12	6
Peter Wager	14	10	10	10
John P. Hall	14	0	10	2
David Ochiltree	15	6	12	6
Augustus McLaughlin	14	11	8	5
Passed Midshipmen—				
J. Howard March	13	2	10	8
James S. Thornton	13	11	7	3
Edward A. Selden	13	2	11	1
Nathaniel T. West	13	10	11	6
Allen T Byrens	13	10	4	9
Edmund Shepherd	13	2	10	4

DROPPED.

	Yrs in the Service. Y.	M.	Total Sea Service. Yr.	M.
Wm. R. Mercer	13	0	9	3
Charles Gray	13	2	10	4
George S. King	12	9	7	3
Joseph A. Sewall	12	5	9	4
Charles B. Smith	8	1	6	4
James Bruce	6	2	5	1

Promotions.

TO CAPTAINS.

Commanders—				
G. I. Pendergrast	43	0	19	7
Wm. C. Nicholson	42	9	22	11
Jos. B. Hull	41	1	19	3
John Kelly	40	11	14	5
Wm. H. Gardner	40	0	17	3
David G. Farragut	44	0	18	10
Stephen B. Wilson	43	0	15	0
T. Aloysius Dornin	39	8	24	4
Robt. B. Cunningham	40	1	18	1
Victor M. Randolph	40	6	12	6
Frederick Engle	40	0	17	4
John Rudd	40	1	22	5
Wm. McKean	40	1	15	10
Franklin Buchanan	39	11	21	2
Samuel Mercer	39	9	16	11
Charles Loundes	39	9	16	4
L. M. Goldsborough	42	6	16	4
Geo. N. Hollins	40	11	16	6
Duncan N. Ingraham	41	6	13	2
John Marston	41	8	18	7
Henry A. Adams	40	9	19	5
Wm. S. Walker	40	1	11	9
George F. Pearson	39	9	17	5
Samuel F. Dupont	39	0	18	9
Wm. L. Hudson	39	0	18	9
Geo. A. Magruder	38	0	18	7
John Pope	38	7	18	9
Levin M. Powell	37	10	16	11
Charles Wilkes	37	0	9	7
Thomas O. Selfridge	37	0	14	6
Henry Eagle	37	0	16	9
G. J. Van Brunt	36	2	13	2
Wm. M. Glendy	37	0	16	11
Geo. S. Blake	36	8	16	11
Wm. Green	37	0	13	10
Samuel Barron	43	0	17	10
Andrew A. Harwood	37	0	13	9

TO COMMANDERS.

Lieutenants—				
Charles H. McBlair	31	9	13	4
John W. Livingston	32	9	13	4
Archibald B. Fairfax	31	4	10	4
Henry K. Thatcher	31	9	13	3
James H. Rowan	31	4	13	3
Wm. McBlair	30	1	13	7
John S. Missroon	30	6	14	8
Richard L. Page	30	9	18	1
Frederic Chathard	30	1	17	7
Benjamin J. Totten	31	9	14	2
Arthur Sinclair	31	10	17	1
Robert B. Hitchcock	30	0	15	1
C. H. A. H. Kenedy	35	10	16	7
Thomas W. Brent	29	10	15	0
Jos. Lanman	30	0	15	1
John K. Mitchell	29	11	15	1
Thomas Turner	29	8	16	7
Charles H. Poor	29	10	17	6
James Findlay Schenck	29	10	14	3
Timothy A. Hunt	09	10	14	7
Sylvanus W. Godon	35	9	17	5
Wm. Radford	29	10	11	4
Samuel F. Hazard	32	0	18	1
John M Berrien	29	16	13	2
Geo. A. Prentiss	29	10	12	3

PROMOTIONS.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Alfred Taylor	30	0	16	4
Samuel P. Lee	29	1	14	10
John P. Gillis	20	0	15	1
Samuel Swartwout	34	7	16	11
Raphael Semmes	38	9	11	1
James P. McKinstry	28	11	15	0
Oliver S. Glisson	28	2	16	10
John H. Dahlgren	28	11	7	2
Stephen C. Rowan	28	11	17	5
Edward E. Thompson	28	1	13	4
Guert Gansevoort	31	9	14	9
Charles Green	28	8	11	8
Edward L. Handy	28	7	15	5
Melancton Smith	28	10	15	2
Wm. C. Claplain	28	2	15	6
Cicero Price	28	11	16	6
J. R. Goldsborough	30	1	17	7
Charles S. Boggs	28	2	12	9
J. R. Tucker	28	7	17	2
T. P. Green	28	7	17	2
Thomas J. Page	27	3	11	5
George Minor	27	9	15	9
Percival Drayton	27	1	16	4
Robert F. Pinkney	27	1	15	3
Thomas R. Rootes	27	10	15	5
Edward M. Yard	27	2	15	8
Wm. S. Young	27	70	14	4
Joseph F. Green	27	2	15	0
John DeCamp	27	3	15	9
Charles W. Pickering	32	8	15	7
Overton Carr	27	10	15	8
Luther Stoddard	27	9	15	0
Wm. M. Walker	27	2	12	11
John A Winslow	28	11	15	0
Benjamin M. Dove	28	1	18	1
Thornton A. Jenkins	26	2	10	8
John Rodgers	26	8	17	11
John B. Marchand	26	8	18	8
Wm. Rodgers Taylor	26	9	13	6
H. J. Hartstene	26	8	12	3
Benjamin F. Sands	26	8	13	2
Henry French	27	0	16	11
Samuel Larkin	26	9	15	6
H. S. Stellwagen	26	9	15	7
James L. Henderson	36	7	14	0
Daniel B. Ridgely	26	8	12	7
Wm. Y. Muse	26	7	13	9
Charles Steedman	26	8	25	3
Wm. Lewis Herndon	26	2	11	10
James Alden	26	9	16	1
Aug. L. Case	26	6	15	9
Roger Perry	26	6	14	10

TO LIEUTENANTS.

Masters—				
Wm. N. Jeffers	14	3	8	0
Wm. D. Austin	14	2	9	7
Edward Brinley	13	3	9	4
Edward Simpson	14	11	11	1
Wm. G. Temple	10	4	10	4
George P. Welsh	14	3	10	5
S. P. Carter	14	10	8	8
Wm. Nelson	14	11	9	10
Charles W. Aby	14	10	10	7
Edward C. Stout	14	10	10	1
Passed Midshipmen—				
Reuben Harris	14	11	10	1
James B. McCauley	14	11	11	7
Thomas S. Phelps	14	11	11	6
Alexander F. Warley	14	10	10	5
Garrit V. Denniston	14	9	12	11
Leonard Paulding	14	0	10	8
Francis S. Conover	14	7	11	4

PROMOTIONS.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Edward Barrett	14	2	10	3
Colville Terrett	14	11	10	6
John W. Bennett	14	10	11	10
Homer C. Blake	14	10	10	4
Clark H Wells	14	3	19	6
Stephen P. Quackenbush	14	10	9	5
Earl English	14	10	11	8
Joseph M. Bradford	14	11	12	0
Reigart B Lowry	14	11	11	2
Jonathan H. Carter	14	10	8	0
Wm. H. Parker	13	2	8	8
J. Pembroke Jones	13	2	10	5
David A. McDermot	13	2	5	9
Wm B. Buckner	13	3	7	8
George E. Morgan	13	10	10	7
Richard L. Law	13	10	10	9
Wm. H. Wilcox	13	11	11	2
John T. Barraud	13	3	10	6
Thomas Rony	12	8	11	6
John H. Upshur	13	1	9	5
John Van N. Philip	13	10	8	1
Samuel R. Franklin	13	10	10	8
Wm. D Whiting	13	10	9	8
Wm. L. Powell	13	3	9	11
S. Ledyard Phelps	13	2	5	7
Edward Y. McCauley	13	2	10	8
Theodoric L. Walker	13	3	10	7
Wm. Mitchell	13	3	7	6
Francis A. Roe	13	2	7	11
Joseph B. Smith	—	—	—	—
Wm. Murdaugh	13	3	10	5
John M. Brooke	13	9	9	10
Wm. Gibson	13	10	11	6
Edward Renshaw	13	1	10	8
Joseph D. Daniels	12	2	11	3
John T. Walker	13	10	11	3
J. C. P. De Krafft	13	2	9	7
John Van McCollum	13	10	11	0
John E. Hart	13	10	10	0
Oscar C. Badger	13	3	9	8
Thomas C. Harris	13	3	9	7
John Kell	13	3	10	9
John L. Davis	13	11	11	5
Alexander A. Semmes	13	2	8	5
John B. Stewart	13	3	10	11
M. Patterson Jones	13	3	10	1
Watson Smith	13	2	8	11
Alexander M. De Bree	13	2	9	7
Joseph E. De Haven	13	3	10	7
Alexander W. Habersham	13	9	11	4
Wm. T. Truxton	13	10	9	5
John K. Wilson	13	9	11	5
Greenleaf Cilley	13	10	9	7
Horace N. Crabb	13	2	10	2
Samuel Megaw	13	1	9	5
James H. Rochelle	13	3	9	1
Robert D. Minor	13	10	10	1
Wm. C. West	13	11	11	2
Nicholas H. Van Zant	13	2	9	2
Francis G. Dallas	13	2	5	6
Simeon S. Bassett	13	3	9	1
Robert C. Duvall	13	2	10	0
David P. McCorkle	13	3	8	6
George H. Hare	13	2	9	3
William Sharp	13	3	11	8
James I. Waddell	13	3	6	3
Wm. M. Gamble	13	10	11	2
Jonathan Young	13	2	9	9
Wm. K. Mayo	13	2	10	3
Thomas Young	13	2	8	9
James E. Jouett	13	3	8	8
T. Scott Fillebrown	13	2	10	10
Joseph Fry	13	3	9	10
Leonard H. Lyne	13	2	10	0
Milton Haxtun	13	2	8	7
Robert Selden	13	3	9	6
Albert Allmand	13	3	11	3
Robert Stuart	13	2	10	1

PROMOTIONS.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
Theodoric Lee	13	3	8	5
George H. Bier	13	2	10	0
Pendleton G. Watmough	13	3	9	10
George W. Young	13	2	11	4
John H. Russell	13	3	8	10
Edward E. Stone	13	2	9	7
Thómas C. Eaton	13	0	9	3
Dawson Phenix	13	3	9	4
Robert F. R. Lewis	13	2	8	10
Charles P. McGary	13	2	9	8
Hunter Davidson	13	2	10	1
Andrew W. Johnson	13	2	9	11
Stephen B. Luce	13	2	10	2
Dulany A. Forrest	13	9	9	4
Robert W. Scott	13	3	10	2
Walter W. Queen	13	2	6	7
Robert R. Carter	22	9	9	9
Edmnnd W. Henry	12	8	8	3
Thomas T. Houston	9	4	5	1
Ralph Chandler	9	3	7	5
John R. Hamilton	8	3	5	5
James Parker	8	1	6	2
Philip C. Johnston, Jr	8	4	6	5
John Watters	8	10	6	6
R. Randolph Breeze	8	1	6	10
Oscar F. Johnson	8	4	5	10
Lewis A. Kimberly	0	0	0	0
Beverly Kennon	8	4	6	7
S. Livingston Breese	8	7	5	4
George U. Morris	8	4	5	7
E. F. Gray	8	8	7	2
John G. Sproston	8	5	7	2
Bancroft Gherardi	8	6	6	7
Daniel L. Braine	8	7	6	11
John Taylor Wood	7	8	5	5
L. Howard Newman	7	3	6	1
Charles Edmonston Thorburn	7	3	5	10
Richard T. Bowen	7	0	5	6
Charles W. Flusser	7	0	6	0
Wm. S. Lovell	7	2	5	8

PROMOTIONS.	Yrs. in the Service. Yr.	M.	Total Sea Service. Yr.	M.
John R. Eggleston	7	4	5	7
Andrew B. Cummings	7	8	6	1
Bayard A. Hand	7	8	5	11
Geo. E. Belknap	7	2	5	4
Edward P. Williams	7	3	5	4
Jared P. K. Mygatt	7	3	5	9
John D. Rainey	8	9	5	0
David B. Harmony	7	8	5	11
Wm. Gwyn	7	8	5	8
John Jacob Cornwell	7	11	6	0
James P. Foster	8	7	5	8
Washington Totten	7	1	5	5
Henry Wilson	7	2	5	8
A. E. K. Benham	7	1	5	6
Robert T. Chapman	7	8	5	8
Wm. P. A. Campbell	7	0	5	7
Wilson McGunnegle	8	0	4	7
John Irwin	7	3	5	7
J. S. Skerrett	6	2	4	11
James A. Greer	6	11	5	7
Charles H. Greene	6	7	5	6
Francis H. Baker	6	2	4	10
Isaac W. Hester	6	2	4	0
Aaron Ward Weaver	6	7	5	5
John A. Johnston	6	4	5	2
Austin Pendergrast	6	2	4	4
Joseph P. Fyffe	7	4	4	8
Wm. McCann	6	2	4	11
James Stillwell	7	3	5	9
Julius G. Heileman	6	9	4	8
J. S. Stillwell	7	3	5	6
Joseph D. Blake	7	3	4	11
Eugene H. Oakley	7	4	3	8
James H. Gillis	6	2	4	5
To Masters—				
Wm. A. Fitzhugh	6	1	4	3
Trevett Abbott	6	2	4	9

And 15 others who stand highest on the list of the last class, passed at the Naval Academy.

NAVAL CHANGES.

RESIGNATIONS.

Surgeon James Jeffray Brownlee.
P. A. Surgeon Robert J. Farquharson.

ORDERS

TO THE NAVY YARD, BOSTON.

Commodore Silas H. Stringham, in place of Commodore Francis H. Gregory, whose term of duty has expired.

TO THE NAVY YARD, PORTSMOUTH, NEW-HAMPSHIRE.

Commodore John Thomas Newton, in the place of Commodore Joseph Smoot, retired.

TO THE NAVY YARD, NEW-YORK.

Captain Abraham Bigelow, in the place of Captain Charles Boarman, retired.

TO THE RECEIVING SHIP NORTH CAROLINA.

Commander William W. Hunter, in the place of Commander John Calhoun, retired. Lieutenants—James H. Strong, John P. Decatur.

At the time of our going to press the following officers had reported for the San Jacinto, *Flag-ship of East India Squadron*:

Commodore—James Armstrong.	*Chief Engineer*—B. F. Isherwood.
Commander—Henry H. Bell.	1*st Assist.* " —E. S. De Luce.
Fleet Surgeon—W. Maxwell Wood.	2*d* " " —W. P. Brooks.
Purser—John O. Bradford.	" " " —H. W. Spooner.
Lieutenants—J. C. Williamson.	3*d* " " —H. C. Victor.
" John Rutledge.	" " " —Ten Eyck Biles.
" N. C. Bryant.	" " " —C. H. Barker.
Acting Master—Richard S. Bowen.	*Boatswain*—Charles Johnson.
Assistant Surgeons—J. E. Sample.	*Gunner*—J. C. Ritter.
" R. P. Daniel.	*Carpenter*—Asa Poinsett.

Sailmaker—Stephen Seaman.

To the Jamestown, Coast of Africa, Commander James H. Ward.

The Massachusetts.—The United States Steamer Massachusetts, S. Swartwout, Lieut. Commanding, sailed from San Francisco on the 26th August, for the Mexican coast. She is ordered to visit Acapulco, and other ports in Mexico, to inquire into the late injuries inflicted by Mexican authorities, on the persons and property of American citizens. She goes fully prepared for an active cruise, and with the necessary instructions from the commander-in-chief of the squadron in the Pacific, to enforce the liberation of all American citizens who may be unjustly detained by the partizans of Santa Anna. She will probably return to this port next spring. The following is a list of her officers:—Lieut. Commanding, Samuel Swartwout; Lieuts. Reginald Fairfax and J. B. McCauley; Acting Master, A. A. Semmes; Purser, C. F. Cutter; Passed Assistant Surgeon, William D. Harrison; Passed Midshipmen, Jonathan Young and Dulaney A. Forrest; Second Assistant Engineer, William A. R. Lattimer; Acting Assistant Engineer, Edwin Sutton; Third Assistant Engineer, George W. Tennant; Captain's Clerk, P. R. Fendall; Boatswain, Alexander Tyler; Gunner, A. W. McAlpin; Carpenter, E. O. Cassidy.

General Pelissier made a Marshal.—The *Moniteur*, of Sept. 13, contains the following decree:—

Napoleon, by the grace of God, and the will of the people, Emperor of theFrench:—

Taking into consideration the eminent services rendered by General Pelissier, especially in the Crimea, while commanding our army in the East, we decree as follows:—

Aimable Jean Jacques Pelissier, General of Division, is raised to the rank of a Marshal of France.

Dated St. Cloud, Sept. 12, 1855. NAPOLEON.

THE UNITED STATES STEAM PROPELLER NIAGARA.

Messrs. Pease and Murphy, of the Fulton Iron Works, foot of Cherry-street, East River, will commence to remove from their shops the four boilers intended for the splendid national ship Niagara. The boilers are completed, and of immense size, containing over 8,000 brass tubes, and will weigh about 280,000 lbs. They are progressing rapidly with her three engines. The frames or bed-plates are finished, weighing 52,000 lbs.; the straight shafts, weighing 90,000 lbs., are finished; the crank-shaft, weighing 45,000 lbs., will be finished in a few days. The cylinders, weighing 59,000 lbs., and condensers, weighing 68,000 lbs., are nearly completed; the pistons, piston-rods, pillow-block, caps, and cupolas, weigh about 46,000 lbs. The composition stern-pieces, couplins, and sheave-blocks, are all under way. The propeller, weighing about 26,000 lbs., will be cast in a few weeks. The valves are all finished.

If the ship is launched by the 1st of October, her boilers will be at once put in her, and they will commence to put her machinery in. Messrs. P. & M. calculate to have her in working order, ready for steam, in about four months after she reaches the water.

THE VOYAGE OF THE UNITED STATES SHIP SUPPLY.

TUNIS, AUG. 18, 1855.

The United States store ship Supply, Lieut. D. D. Porter commanding, reached here on the 4th inst., on her way to the Levant, in search of camels. Major Wayne, the chief of the expedition, on which the Supply was sent out, was presented to the Bey, with several of the officers. The Major, in behalf of the United States' Government, offered congratulations to the Bey on his accession to the throne, expressing the desire of the United States for more extended intercourse, and closer commercial relations between the two countries, and for a long, happy, and prosperous reign for his Highness. The Bey reciprocated these friendly sentiments.

His Highness hearing of the Major's desire, to purchase, on government account, a camel in Tunis, sent him two of the finest among all he possessed, which were accepted, with proper acknowledgments, in the President's name, &c. I have seen both the camels, the larger being the finest I ever saw; and the other, a younger one, bidding fair to equal his companion in time.

The Bey is highly interested in the improvement of his people in agriculture, and shows a great desire to acquaint himself thoroughly with its progress in the United States, which does his true benevolence and enlightenment great credit, indeed.

The Supply left here on the 10th instant, taking, as passengers to Malta, the widow and daughter of Sir Edward S. Baynes, late English Consul-General at this capital. This was a handsome act of international courtesy, these ladies being left alone here at a time of general sickness, and in great distress, by the bereavement mentioned above. There were no other convenient means through which they might reach Malta, which is but very little out of the route of the vessel to the Levant. A brother of the late Consul-General holds a high command at Malta.

The Supply took on board a beautiful block of marble, from the ruins of Carthage, for the Washington Monument, presented by Dr. D. P. Heap, son of our late Consul. The block is variegated—red and white—marble, and was cut from one of the columns of the attributed temple of Esculapius, and bears on its front-face an excellent representation of the arms of Carthage, in Mosaic, in *jaune antique*, on a black ground, with the words "Carthage," and the legend—Presented by David Porter Heap, July 4, 1855, surrounded by a wreath of olive leaves in *verd antique*, on the exergue.—*N. Y. Herald.*

ICONOGRAPHIC CATALOGUE OF THE U. S. LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

The collections in the United States Naval Lyceum having become so extensive as to render a catalogue essential to their proper care, the Librarian has undertaken to furnish such an one, as will enable all persons interested to become familiar not only with the books contained in the Institution, but with all the objects and subjects of which they treat, so far as the contents of the Lyceum can serve to illustrate them. The labor and expense which the publication of an Iconographic Catalogue of so large a collection involves, could not possibly be met by the funds of the Lyceum, therefore the facilities which are kindly offered by the proprietors of the U. S. Nautical Magazine and Naval Journal, have been accepted, not only as an expeditious way, but as a desirable collateral connection with such matter, as will enhance the circulation of the catalogue among that class of readers to whom it is most desirable.

It will therefore appear in monthy parts, one in each number until completed, and under such heads as are deemed most appropriate for the classification and description of everything in the Lyceum. With this object the Librarian respectfully requests such assistance from all the officers and members as will contribute most to their satisfaction at its completion.

On the 27th day of November, 1833, a few of the Naval officers of this station constituted themselves the nucleus of a Society, to be composed of persons connected with the Navy, which should have for its object the diffusion of useful knowledge, for professional and general improvement. The project was promptly acceded to by most of those residing in the vicinity, and many of the most prominent citizens of New-York and Brooklyn seconded the movement by liberal donations, which, with the favorable notice and the gratuitous presentation of numerous periodicals and newspapers, ushered into being the U. S. Naval Lyceum.

At the conclusion of the first year, a library containing over thirteen hundred volumes and periodicals, and a handsome cabinet, had accumulated. This was a sufficient test of the experiment to command the assistance of many, who were at first indifferent, but now, considering that its success was certain, changed their silent approbation into such active membership, as gave it at once the spirit of the American Navy, to accomplish an end.

The Lyceum speedily became the members' pride, and to every visitor it reflected honor on the service.

From every quarter of the globe valuable communications and donations poured in. The "*Museum*" soon constituted this station preëminently the favorite for all that is rare, beautiful and attractive in the *transient* collections in the Lyceum, as well as the accumulation of such permanent objects of interest and improvement, as unceasingly impel an ebbless tide to the full con-

summation of such a flood as will enable all to drink from its gently overflowing streams, again to reanimate and incite anew the common interest of such a brotherhood in the officers of our Navy, as may be as characteristic of their affections as of their valor.

The superior advantages possessed by the members of this Association over all others, of visiting every part of the world, with the means which their profession affords them in everything adaptable to its objects, are such as to amply facilitate its design; and it is reasonably believed that, considering its stable foundation, with the hearty co-operation of the officers of the Navy, the U. S. NAVAL LYCEUM might quickly become such an accumulative depository, as to make it the embodiment of all that pertains to nautical science and art, and finally, so extensive in its operations, as not only to promote, but to promulgate knowledge derived from the proof of experience, on the best foundation, and such as would be authentic for continued investigation. Nor even to this may the benefits of the LYCEUM be limited. All that pertains to nautical science and art, covers indeed a wide range, and is as limitless as the sea; but the necessary, and should be *cultivated*, versatility of the sailor's talents, scarcely excludes any branch of science from his province.

It may be for the time that the whole energies of his genius are requisite to a single master-stroke of seamanship, or it may be for a treaty of commerce with a Japan.

The collection in the LYCEUM is a fair illustration of the necessities of a sailor's requirements as well as his tastes. The characteristic quickness of perception peculiar to him, with his unlimited opportunities for contemplating the magnificent scenery of different regions of the earth, and of all that is most striking in the domain of nature and art everywhere, keeps his active mind on the alert for any and everything new, by which those who are obliged to form their ideas of his avocations by the works of his hands and the mementos of his toils, may find here land-marks, reflecting new inspirations for the self-sacrificing spirit of the noblest of all professions.

Of nearly 5,000 valuable volumes and pamphlets, covering almost the whole range of science and art, we have several singularly brilliant examples of the combined genius and zeal of the sailor in fields where he is least expected to be found.

The collection on Navigation, Tactics and Military Affairs, is probably the largest in the country, and comprises all the most valuable works in every language. Natural history, and Statics, in all their divisions, are scarcely less complete; and the department of National Jurisprudence is second to none.

Well-filled cabinet-cases of the handsomest specimens in Natural History, fitly illustrate the life and the tastes of the sailor, and eminently checkered as it is with originality, we have here none of the dryness so common to the

everlasting hills, but even where similarity exists, it is in that variety which is always calculated to give the most pleasing effect.

The Portrait Gallery is a collection of America's pride. The Father of his Country in various phases of his greatness surrounded by his compatriots, are here emblematically linked together, and to our memories, by the chain that bound the shores of the Hudson. The canvas here spread is bent to the hearts of every true American, by such gear as defies all the surges of fanaticism.

Constitution and By-Laws of the United States Naval Lyceum.

CONSTITUTION, &c.

We, the Officers of the Navy and Marine Corps, in order to promote the diffusion of useful knowledge, to foster a spirit of harmony and a community of interest in the service, and to cement the links which unite us as professional brethren, have formed ourselves into a Society, to be denominated "The United States Naval Lyceum," and do make and ordain, for our government, the following "Constitution," hereby pledging ourselves to the support and maintenance of the same:

Article I.—It shall consist of four classes of Members, to wit:—Resident, Absent, Corresponding and Honorary. Resident Members shall be such as dwell in the city of New-York, and its immediate vicinity; Absent members, those residing at a distance from New-York and its immediate neighborhood; Corresponding Members, those not belonging to the Navy or Marine Corps; and Honorary Members, such as may be entitled by distinguished merit to be admitted into the Society. The number of Honorary Members shall not exceed forty, nor shall either they or Corresponding Members be taxed.

Aricle II. All members shall be elected by ballot; candidates for admission shall be proposed by the Nominating Committee previous to being balloted for; the affirmative votes of three-fourths of the members present, shall be necessary to elect a candidate.

Article III. Members, qualified as resident or absent, who shall be present at any business meetings, shall be entitled to vote; but none but resident members shall be eligible to any office in the Society.

Article IV. No member who shall be in arrears for one year, shall be entitled to vote, or be eligible to any office in the Society.

Article V. The officers of the Society shall consist of the Commanding Officer of the New-York Navy Yard, who shall be President ex-officio; two Vice-Presidents; a Corresponding Secretary; two Recording Secretaries; a Treasurer; five Curators; a Librarian, and Assistant Librarian—who shall be chosen at the annual meeting in April. There shall also be elected

at every anniversary meeting, the following Committees:—A Committee of Correspondence, consisting of five members; a Committee of Nomination, consisting of five members; a Finance Committee, of three members; a Library Committee, of five members, and a Draughtsman to the Lyceum; which several Committees shall have the power of filling any vacancies that may happen in their complement between the annual elections.

Article VI. The executive business of the Lyceum shall be conducted by a "Committee of Administration," composed ex-officio, of the Chairman of the Standing Committees, in conjunction with the President, Senior Vice-President, Corresponding Secretary, Librarian, and one of the Curators, to be selected by themselves; which Committee shall have power to discharge the administrative and current business of the Society, under its supervision and the guidance of the laws; shall see that the laws are faithfully executed, and shall furnish from time to time, at the meetings of the Society, such information as may be required.

Article VII. The election of officers shall be by ballot, and the person having the greatest number of votes shall be declared duly elected.

Article VIII. Five members at a stated meeting shall form a quorum, and nine at a special meeting.

Article IX. By-Laws, for the further regulation of the Society, shall from time to time be made.

Article X. No alteration shall be made in this Constitution, unless by a vote to that effect, of three-fourths of the Resident Members, and upon the request in writing of one-third of the Resident Members, submitted at least one month previous to any vote being taken thereupon.

BY-LAWS.

Chapter I.—Of Members.

Election for members may be held at any stated meeting of the Society, after they are duly recommended by the Nominating Committee. Any person proposing a new member shall be accountable for his initiation fee, if he be elected.

No person shall be considered a member until he shall have paid his dues.

The Treasurer shall keep a Register, showing the name, class and time of admission of each member, and shall report annually, or oftener if required, any delinquency arising from the non-payment of dues.

No member shall publish any part of the proceedings of the Lyceum without leave of the Society; and any member of this Institution who shall be cashiered or dismissed, by sentence of a Court Martial, approved, shall cease to belong to it.

This Society shall have power to expel, by a two-thirds vote, any member guilty of disgraceful conduct.

Chapter II.—Of Officers.

The President shall preside at all meetings, and regulate the order thereof; and shall announce donations and other communications to the Lyceum.

He shall have a casting vote in all cases in which there shall be an equal division among the members. On questions of order, members may appeal from his decision, to the Society.

One of the Vice-Presidents shall preside in the absence of the President, and in their absence one of the Committee of Administration.

The Corresponding Secretary shall execute the correspondence of the Lyceum. It shall be his duty to be present at all meetings of the Society, and to read all communications made to it; and also to notify Corresponding and Honorary Members of their election. He shall also keep a record of his correspondence.

The Recording Secretaries shall be present at all the meetings of the Society, and shall keep a record of the members present, and of the proceedings thereof. They shall take charge of all papers belonging to the Society, and shall notify all resident and absent members of their election.

The Treasurer shall have charge of all moneys belonging to the Lyceum. He shall receive all dues from members, or moneys otherwise accruing, and shall pay all demands against the Society after they have been audited by the Committee of Finance.

He shall furnish the Committee of Finance, on due application, with such information of the state of the funds as they may require, and shall report to the Lyceum quarterly, if so requested, the receipts and expenditures of the Institution.

The Curators shall be separately charged, as may be agreed among themselves, with the safe keeping and arrangement of the several collections, and with the keys of the cabinet. The Curator having charge of any division of the collection shall be alone authorised to select duplicate specimens from such division, and such Curator, with the assent of two others, may effect exchanges. The increase and improvement of the collections being the inducement to exchange, the Curators shall in no instance part with any specimen, which is not a duplicate, without obtaining thereby an equivalent, nor in any case with the best specimens, but as excepted.

The Curators shall make a report on the first meeting of each year, exhibiting the condition and arrangement of the Cabinet. They shall keep in their respective departments, so far as may be practicable, descriptive lists of the articles confided to their charge.

Chapter III.—Of Committees.

The Committee of Correspondence shall have a general supervision of the correspondence of the Society, under its control. The Corresponding Secretary shall be ex-officio a member thereof. In his absence at the stated

or special meetings of the Society, one of this Committee shall perform his duty.

The Committee of Finance shall audit all accounts against the Lyceum, and shall have the duties and powers of a Committee of Ways and Means.

It shall be the duty of the Committee of Nomination to report to the Society on all nomination for admission of candidates referred to them.

Committees for special purposes may be appointed when required. When such Committees consist of three members, the nomination thereof shall vest in the presiding officer.

All donations and all written communications shall be referred to the Committees to whose jurisdiction their character may respectively direct them, who shall report thereon with all convenient speed; and all reports of Committees shall be made in writing, if considered necessary by a majority of their members, and when adopted, shall be filed and form part and parcel of the archives of the Lyceum.

Chapter IV.—Of Contributions.

Every member, at the time of his admission, shall pay into the treasury an initiation fee of five dollars; and every Resident and Absent member annually one dollar, which annual payments shall be made in advance.

Any member who shall be in arrears for one year, and shall neglect or refuse to liquidate his dues within three months after notification thereof, if within the United States, his name may be erased from the list of members, by a vote at any meeting.

Chapter V.—Of the Cabinet.

All donations shall have the names of the donors affixed thereto, if practicable, and become the permanent property of the Society.

A list of all ascertained donors shall be kept and exposed in a conspicuous place in the rooms of the Lyceum.

Every member shall have free access to the Cabinet, subject to the regulations of the Curators.

No articles received on deposit shall be removed from the rooms of the Society.

Deposits for the Cabinet will be received, with the privilege of subsequent withdrawal at the option of the depositors.

The Curators shall arrange in systematic order, all articles composing the Cabinet, and keep a catalogue of the same.

Chapter VI.—Of the Library.

The Library to be under the control of the Librarian, and the Library Committee.

No books are to be purchased except by a recommendation to that effect, of a majority of this Committee, and ratified by the Society.

The Librarian to be furnished with a book in which shall be inserted the names of the borrowers, the time when taken out, and when returned.

He shall mark on the printed Catalogue such books as shall be determined not to be taken out in any case whatever.

These books are to be designated by a Special Committee appointed for that purpose.

Books authorised to be taken out may be obtained at any time during the attendance of the Librarian or Assistant Librarian. Books placed in the Library on deposit, are not to be taken from the rooms of the Society; and may be withdrawn by the depositor when he may see fit.

A volume not returned within two weeks shall incur a fine of fifty cents, which shall be doubled if kept out a week longer.

An injury done to books shall be estimated by the Library Committee, and the borrower fined accordingly.

The Librarian to report on the first of June and first of December in each year, the fines he has collected, and pay the same over to the Treasurer.

No member shall take out more than two volumes at one time, nor take out for any other member except by his written order.

A special Committee of three shall be appointed annually, to examine the Library and compare it with the catalogue—they shall note all missing books, and report the same at the next meeting of the Society.

Chapter VII.—Of Meetings.

The ordinary meetings shall be held at 11 o'clock on the first of every month, except when that day falls on Sunday; in which case they shall be held on the succeeding day—the second.

The President or either of the Vice-Presidents, with any five members, may call a special meeting. Nine members shall be necessary to form a quorum, when any sum exceeding five dollars is to be expended.

Written communications tending to the advancement of general and professional knowledge, are invited to be addressed to the Society.

All such communications shall be referred to the Committee of Correspondence, whose duty it shall be to report thereon at the next stated meeting.

Those communications pronounced by the Committee of Correspondence worthy of preservation, are to be read before the Society, and then deposited in the library.

No person shall be admitted into the rooms of the Society, unless introduced by a member.

The officers of the Army of the United States shall be tendered the use of the rooms of the Lyceum, with the privilege of access to its Library, Cabinet, &c.

All Midshipmen of the U. S. Navy not passed, are invited to avail themselves of the benefits of the Institution, by the tender on the part of the Society, of access to its Rooms, Cabinet and Library.

Chapter VIII.—On Business.

It shall be the duty of the Committee of Finance, to report in writing annually, or oftener if required, an exact statement of the condition of the funds of the Lyceum to that date.

When any alteration in existing By-Laws are to be proposed, or any new By-Laws are to be suggested, it shall be the duty of the Recording Secretaries, upon information thereof from the Committee of Administration, to address a notification of the same to the Resident Members.

The following shall be considered the regular order of business at the ordinary meetings:

1. The minutes of the preceding meeting read, and the sense of the members taken thereon.
2. Initiation of new members.
3. Reports of Committees.
4. Communications read and donations offered.
5. Any other business which may be in order and called up.
6. Rough minutes read.
7. Adjournment.

The rooms appropriated to the use of the Society are to be open for the accommodation of the members, daily, Sundays excepted.

Indulgence in loud conversation, or in any practice calculated to disturb the pursuits of members or visitors, who may be present, is strictly prohibited.

The Charter of the Institution, which was granted by the Legislature of New-York in 1835, might be hereunto appended, but it is deemed unnecessary.

THE

U. S. Nautical Magazine,

AND

NAVAL JOURNAL.

Vol. III.] NOVEMBER, 1855. [No. 2.

TO OUR WOULD-BE FRIENDS—THE NAVY.

Have no fears, gentlemen, the Naval Journal *will not* break down because its predecessors have. We are not on their footing, but planted on that sea of commerce of which every nautical man, whether he be in the Navy or out, looks upon with such pride as to make him a generous supporter of a Journal devoted to his interest. The secret of our success, without vanity, lies in our not only making ourselves useful to the class we serve, but *necessary.* We here offer you an avenue of being heard and known; how well, depends upon the resources placed at the disposition of our humble efforts.

THE WAR.

The English were so far in the rear, we find, after a month's diligent culling, that the voluminous accounts in all their papers, each from its own correspondent, are after all but repeated attempts to give a better phase to their deplorable want of force, so well characterized by the *sickly* distinction which the Emperor Napoleon makes in his request of Pelissier to congratulate them.

That the Emperor made out a correct diagnosis in the kind of force necessary to the fall of Sebastopol, is as clear in his choice of Pelissier to effect it, as the leading example of General Simpson, ensconced between the banks of a deep ditch with his cloak-capes turned snugly over his head to keep the dust out of his eyes—is, of the kind of force which such a commander was likely to instigate. The *moral* certainty of a total lack of *physical* force on the part of the English, the Emperor has very delicately got over, by placing the word *moral*, (which here indicates *might as well have been anywhere else*) before *force.*

"At daylight on Wednesday, the 5th of September, the Allies opened their last bombardment, which was continued for 78 hours without intermission, day or night. It was far more severe than any previous cannonade, and Gortschakoff calls it emphatically, 'a hellish fire.' The same (Wednesday) evening, an English rocket set on fire the Russian frigate *Marian*, whose blaze illumined the whole of the city and camps beyond. On Thursday a French shell destroyed another ship, and the same afternoon a conflagration burst out in the devoted town, accompanied by the explosion of a magazine. These were but trifling preludes. At noon on Saturday, the 8th, up to which time there had been an incessant and tremendous fire, the assault was made in four columns—three French and one English. One French column assaulted the Little Redan, between the Malakoff and the Careening harbor; the second, under General Bosquet, rushed up the Malakoff, officers and men mingled in one impetuous pell-mell, having only thirty feet of ground to pass over between their own trenches and the first line of the enemy's works. The English column attacked the Great Redan; and the remaining French column, under Gen. De Salles, attempted the Central Bastion, (much further West) a little later. Gortschakoff claims to have repulsed the enemy six times—at what points is uncertain. The Malakoff itself seems to have been solidly occupied from the first assault. The very strength of the place proves to have been its weakness. Todleben's wonderful ingenuity has outdone itself, and helped the Allies to capture the key of the whole defence. The first tier of guns was protected by the second from the fire of the interior lines of defence; and the second tier was in like manner protected by the third. The French Sappers, with characteristic celerity, turned the defence of the place against the enemy, This was the easier from the fact that, in order to diminish the danger from French shells, the whole interior of the work was broken up by a labyrinth of covered ways, which answered admirably the purpose for which they were intended, but prevented the bringing of any great number of men, or any concentration of fire, upon any point within the lines. The Allies, therefore, would seem to have occupied the Malakoff 'solidly' from the first, although the carnage at the attack must have been great. The Little Redan and the salient of the Great Redan were both captured at first; but the reserves and the close fire of the second line of defence, were too crushing to permit the permanent occupation of either. With severe slaughter, the French were driven back from the one, and the English from the other. The attack on the Central Bastion by the French, though twice repulsed, failed altogether.

"Thus the French at the Malakoff, under the dashing Bosquet, monopolized the victory of the day. Again and again did the Russians attempt to drive them out; but in vain. The French were at last masters of the Malakoff. They had struck out the key-stone of that arch of defence, which has for nearly a year defied the utmost efforts of the Allied arms. The rest of the arch had nothing to do but to fall. The assault lasted for an hour; but then the French eagles floated over the Malakoff, and the sight was received with one spontaneous shout by the whole army. The English held the Redan for nearly an hour before they were driven back.

"Though at every other point the assault had failed, with terrible slaughter of the assailants, yet, the Malakoff being taken, Gortschakoff knew that the whole city was untenable. From the Quarantine battery to the Careening harbor, every spot is commanded by the high hill of the Malakoff; and fur-

ther defence, however prolonged and bloody, *must* therefore eventually fail. The usual Russian policy was at once adopted. He proceeded to destroy what he could, and then evacuated the town—a purpose for which he had been of late so active in constructing a bridge. Within the 24 hours previous to the assault, he lost 2,500 men by the Allied fire.

"It was towards evening when the fighting ceased. The French, fearful of mines and surprises, ventured no further than their conquest, the Malakoff, in which they were busily at work all night, strengthening themselves in their new and decisive position. Meanwhile, the Russians were equally busy in the darkness, at their work of destruction. The mines were sprung in every direction. Battery after battery was blown up. The terrible explosions shook the earth in rapid succession. Public and private buildings, arsenals and forts, burst after burst, flashed up with thundering noise, scattering ten thousand fragments in the air, and swelling the thick clouds of smoky ruin that hung over the city like a dense pall of death; and conflagrations breaking out in every direction, burned without hindrance. The fleet, too—that magnificent fleet, the darling of so many Czars, upon which such countless millions had been lavished—perished along with its arsenals and dockyards. One hundred and eight vessels of all sizes, with an armament of 2,200 guns, are now as if they had never been. One after another, on that fatal night, they blazed up in spontaneous self-destruction, or were scuttled, and, unseen amid the surrounding gloom, sank successive in inglorious silence to the bottom of the sea. The only exploit ever performed by that fleet, was the massacre of Sinope. Its end is worthy of its previous career. At morning dawn only three small steamers remained, except the blackened and smoking hulks; and those three have since been burned. Meanwhile the garrison—what remained of it—marched steadily over the bridge, troop after troop going all night, and until the morning was well advanced; when, after suffering somewhat from the Allied fire, the bridge of rafts was broken down behind them. The roar of battle and the sudden thunders of explosion were now nearly over; and the French found themselves on their commanding height, looking down upon the devastation,—black, shattered, and smoking, and burning ruins on every side,—as thoroughly deserted of human beings as if the blasted town were the crater of a volcano. It was long before they ventured to explore—fearing fresh surprises. But the ships of the fleet approached the silent Quarantine and found its embrasures dumb. Exploring parties soon tried other parts of the town; and they then began slowly to realize the magnitude of their success.

"Vast as had been the work of destruction, it was still incomplete. The Allies were amazed at the amount of material which they even yet found undestroyed. More than four thousand cannon, and an almost inexhaustible store of material, satisfied them that the resources of the place were far more abundant than they had even suspected before. Signs of *exhaustion* there were none. In this point alone, the capture has been of immense value to them.

"The Allies estimate the loss of the Russians at 18,000 men killed and wounded. The French acknowledge 5 generals and 1,500 killed and 5,000 wounded. Three or four hundred deserters have come over from the Russians, most of them Poles. They state that the demoralization of the Russian army was complete, and that the confusion was so great that no provisions whatever were dealt out to the troops for 24 hours after the attack on

the 8th, at noon. The consequent hunger and fatigue must have been a terrible addition to the sufferings of that bloody day and that fearful night. The stories of deserters, however, ought to be taken with some allowance.

"Ever since the capture, the Russians have kept up a steady fire—though by no means severe—from the North side. The balls from Fort Constantine reach beyond Strelitzka Bay; and some of the batteries not only command the town, but can carry over the town, as far as the advanced siege works of the Allies. Their fire, however, from its distance, cannot be as destructive as that of the Allies, which Sebastopol has already borne for so many months. Fort St. Nicholas—which was left by the Russians almost uninjured—is already replying to the enemy's guns on the North side. It is said that Sebastopol is to be razed, and the basins filled up, but this does not look much like it."

Every fresh incident, gathered from whatever source, heightens the proof that the French attack on the Malakoff was the most admirably planned and perfectly executed assault known in the annals of war. The rapidity with which every movement was executed is only equalled by the wonderful precision of the arrangements. *Fourteen minutes* is the largest estimate, and from that to *ten*, of the time of the capture and the unfolding of the tri-color from the central position! A ditch, 18 feet deep, and ramparts 36 feet high, cleared, and 2,500 brave defenders driven out of the strongest fortification in the world, *in less than* 15 *minutes*!

The following is PELISSIER'S OFFICIAL DISPATCH:

"HEADQUARTERS, SEBASTOPOL, *Sept.* 11, 1855.

"The artillery of the right attack commenced on the 17th of August a well sustained fire against the Malakoff, Little Redan, and the neighboring defences, in order to permit our engineers to establish their defences close to the place, from which the troops might be able instantly to throw themselves upon the enciente. On the 5th of September our batteries opened a violent fire against the town, and the English, on their side, kept up a hot cannonade against the Great Redan.

"On the 8th of September, at noon, all being ready, I resolved, in concert with General Simpson, to give the assault. General McMahon's division was to carry the Malakoff. General Dulac's divison to attack the Little Redan, and in the centre the division of General Samotteronge was to march against the curtain connecting these two extreme points. I gave to General Bosquet General Mellinet's division of guards to support the first three divisions. General de la Marmora wished to join the Sardinian brigade to that, having at its head General Levaillant's division, which was to penetrate into the interior of the town by the Central Bastion, and afterwards turn the Flagstaff Bastion, in order to establish a lodgment there likewise.

"The English and French mortar boats rendered us great assistance.

"After unexampled difficulties General McMahon's division succeeded in effecting a lodgment in the interior parts of the Malakoff. Standing in the Tranchion Redoubt on the Mamelon, I considered the Malakoff was safely in our power, and I gave then the signal agreed upon with General Simpson. The English immediately advanced bravely against the salient of the Great Redan. They were able to effect a lodgment, and struggled to maintain the position, but were crushed by the Russian reserves and a violent fire of artillery, and were forced to return to their parallel.

"A powder magazine exploded near the Malakoff. The Russians, hoping to profit by this accident, immediately advanced in dense masses, disposed in three columns, and simultaneously attacked the centre and left of the Malakoff; but measures of defence had already been taken in the interior of the fortress, and from that moment the enemy appears to have renounced all ideas of further attack. The Malakoff was ours, and no effort of the enemy could wrest it from us. At half-past three, measures were taken for enabling us to repulse the enemy in case of a nocturnal attack; but we were soon released from our uncertainty. As soon as it became night, fires burst forth on every side, mines exploded, and the sight of Sebastopol in flames was one of the most awe-inspiring pictures that the history of wars can have presented. The enemy made a complete evacuation by means of a bridge constructed between the two shores of the roadstead, and under cover of successive explosions prevented me from approaching and harrassing him."

"PELISSIER."

GEN. SIMPSON'S OFFICIAL DISPATCHES.

"WAR DEPARTMENT, *Sept.* 23.

"Major the Hon. Leicester Curzon arrived this morning with a dispatch from General Simpson to Lord Panmure, of which the following is a copy:

"BEFORE SEBASTOPOL, *Sept.* 9, 1855.

"MY LORD—I had the honor to apprise your Lordship, in my dispatch of the 4th inst., that the engineer and artillery officers of the Allied armies had laid before Gen. Pelissier and myself a report recommending that the assault should be given on the 8th inst., after a heavy fire had been kept up for three days.

"This arrangement I agreed to, and I have to congratulate your Lordship on the glorious results of the attack of yesterday, which has ended in the possession of the town, dockyards, and public buildings, and destruction of the last ships of the Russian fleet in the Black Sea. Three steamers alone remain, and the speedy capture or sinking of these must soon follow.

"It was arranged that at 12 o'clock in the day, the French columns of assault were to leave their trenches and take possession of the Malakoff and adjacent works. After their success had been assured and they were fairly established, the Redan was to be assaulted by the English; the Bastion, Central, and Quarantine Forts on the left were simultaneously to be attacked by the French.

"At the hour appointed our Allies quitted their trenches, entered, and carried the apparently impregnable defences of the Malakoff, with that impetuous valor which characterizes the French attack; and having once obtained possession, they were never dislodged.

"The tri-color planted on the parapet was the signal for our troops to advance.

"The arrangement for the attack I entrusted to Lieutenant-General Sir William Codrington, who carried out the details in concert with Lieutenant-General Markham.

"I determined that the second and light divisions should have the honor of the assault, from the circumstance of their having defended the batteries and approaches against the Redan for so many months, and from the intimate knowledge they possessed of the ground.

"The fire of our artillery having made as much of a breach as possible in the salient of the Redan, I decided that the columns of assault should be directed against that part, as being less exposed to the heavy flanking fire by which this work is protected.

"It was arranged between Sir W. Codrington and Lieut. General Markham that the assaulting column of 1,000 men should be formed by equal numbers of these two divisions, the column of the Light Division to lead, that of the second to follow. They left the trenches at the preconcerted signal, and moved across the ground preceded by a covering party of 200 men, and a ladder party of 320. On arriving at the crest of the ditch, and the ladders placed, the men immediately stormed the parapet of the Redan, and penetrated into the salient angle. A most determined and bloody contest was here maintained for nearly an hour, and, although supported to the utmost, and the greatest bravery displayed, it was found impossible to maintain the position.

"Your Lordship will perceive, by the long and sad list of casualties, with what gallantry and self-devotion the officers so nobly placed themselves at the head of their men during the sanguinary conflict.

"I feel myself unable to express in adequate terms the sense I entertain of the conduct and gallantry exhibited by the troops, though their devotion was not rewarded by the success which they so well merited; but to no one are my thanks more justly due than to Colonel Windham, who gallantly headed his column of attack, and was fortunate in entering and remaining with the troops during the contest.

"The trenches were, subsequently to this attack, so crowded with troops, that I was unable to organize a second assault, which I intended to make with the Highlanders, under Lieutenant General Sir Colin Campbell, who had hitherto formed the reserve, to be supported by the third division, under Major-General Sir William Eyre. I therefore sent for these officers, and arranged with them to renew the attack the following morning.

"The Highland Brigade occupied the advanced trenches during the night. About 11 o'clock the enemy commenced exploding their magazines, and Sir Colin Campbell, having ordered a small party to advance cautiously to examine the Redan, found the work abandoned; he did not, however, deem it necessary to occupy it until daylight.

"The evacuation of the town by the enemy was made manifest during the night. Great fires appeared in every part, accompanied by large explosions, under the cover of which the enemy succeeded in withdrawing their troops to the north side by means of the raft-bridge recently constructed, and which they afterwards disconnected and conveyed to the other side.

"Their men-of-war were all sunk during the night.

"The boisterous weather rendered it altogether impossible for the admirals to fulfill their intention of bringing the broadsides of the Allied fleets to bear upon the Quarantine batteries; but an excellent effect was produced by the animated and well-directed fire of their mortar vessels, those of her Majesty being under the direction of Capt. Wilcox, of the Odin, and Capt. Digby, of the Royal Marine Artillery.

"It now becomes my pleasing duty, my Lord, to place on record the high sense I entertain of the conduct of the army since I have had the honor to command it. The hardships and privations endured by many of the regiments during a long winter campaign, are too well known for me to comment

upon. They were borne, both by officers and men, with a patience and unmurmuring endurance worthy of the highest praise, and which gained them the deserved applause and sympathy of their country.

"The Naval Brigade, under the command of Captain the Hon. Henry Keppel, aided by Captain Moorsom, and many gallant officers and seamen, who have served the guns from the commencement of the siege, merit my warmest thanks.

"The prompt, hearty, and efficacious co-operation of her Majesty's navy, commanded by Rear-Admiral Sir Edmund Lyons, and ably seconded by Sir Houston Stewart, has contributed most materially to the success of our undertaking; and here, perhaps, I may be permitted to say that, if it had pleased God that the successful result of this memorable siege should have been reported by my ever-to-be-lamented predecessor in this command, I am sure that it would have been one of his most pleasing duties to express the deep sense which I know he entertained of the invaluable assistance and counsel he received on all occasions from Sir Edmund Lyons. When at times affairs looked gloomy and success doubtful, he was at hand to cheer and encourage; and every assistance that could tend to advance the operations was given with the hearty good will which characterizes the British sailor.

"Nothing has contributed more to the present undertaking than the cordial co-operation which has so happily existed from the first between the two services.

"I cannot sufficiently express my approbation of the conduct of the Royal Engineers, under Lieutenant-General Sir Harry Jones, who has conducted the siege operations from the beginning of this year. For some time past he has been suffering on a bed of sickness, but the eventful hour of the assault would not permit him to remain absent; he was conveyed on a litter into the trenches to witness the completion of his arduous undertakings.

"My warmest thanks are due to the officers and soldiers of the Royal Artillery, under the command of Major-General Sir R. Dacres, who, during the arduous operations of this protracted siege, have so mainly contributed to its ultimate success.

"I must beg further to record my thanks for the cordial co operation and assistance I have received in carrying out the details of the service from the chief of the staff, the Adjutant and Quartermaster-Generals, and general staff, as well as generals commanding divisions and brigades of this army.

"I must reserve to myself, for the subject of a future dispatch, bringing before your Lordship the particular mention of officers of the various branches of this army, whom I shall beg to recommend to your favorable notice.

"I entrust this dispatch to the care of Brevet-Major the Hon. Leicester Curzon, who has been Assistant Military Secretary to my noble predecessor and myself since the commencement of this war, and who will be able to give your Lordship more minute details than the limits of a dispatch will allow.

"I have, &c.,

"JAMES SIMPSON, General Comm

"THE LORD PANMURE, &c."

A correspondent of the London *Times* draws the following picture:

"Of all the pictures of the horrors of war which have ever been presented to the world, the hospital of Sebastopol presents the most horrible, heart-

rending, and revolting. It cannot be described, and the imagination of a Fuseli could not conceive anything at all like unto it. The building used as an hospital is one of the noble piles inside the dockyard wall, and is situate in the centre of the row at right angles to the line of the Redan. The whole row was peculiarly exposed to the action of shot and shell bounding over the Redan, and to the missiles directed at the Barrack Battery, and it bears, in sides, roofs, windows, and doors, frequent and destructive proofs of the severity of the cannonade. Entering one of these doors, I beheld such a sight as few men, thank God, have ever witnessed! In a long, low room, supported by square pillars arched at the top, and dimly lighted through shattered and unglazed window frames, lay the wounded Russians, who had been abandoned to our mercies by their general. The wounded, did I say? No, but the dead, the rotten and festering corpses of the soldiers who were left to die in their extreme agony, untended, uncared for, packed as close as they could be stowed, some on the floor, others on wretched trestles and bedsteads or pallets of straw, sopped and saturated with blood, which oozed and trickled through upon the floor, mingling with the droppings of corruption.

"Many might have been saved by ordinary care. Many lay, yet alive, with maggots crawling about in their wounds, Many nearly mad by the scenes around them, or seeking escape from it in their extremest agony, had rolled away under the beds, and glared out on the heart-stricken spectators, oh! with such looks. Many with legs and arms broken and twisted, the jagged splinters sticking through the raw flesh, imploring aid, water, food, or pity, or deprived of speech by the approach of death, or by dreadful injuries in the head or trunk, pointed to the lethal spot. Many seemed bent alone on making their peace with Heaven. The attitudes of some of them were so hideously fantastic as to appal and root one to the ground by a sort of dreadful fascination. Could that bloody mass of clothing and white bones ever have been a human being, or that burnt, black mass of flesh have ever had a human soul? It was fearful to think what the answer must be. The bodies of numbers of men were swollen and bloated to an incredible degree, and the features distended to a gigantic size, with eyes protruding from the sockets, and the blackened tongue lolling out of the mouth, compressed tightly by the teeth which had set upon it in the death rattle, made one shudder and reel round.

"In the midst of one of these 'chambers of horrors'—for there were many of them—were found some dead and some living English soldiers, and among them poor Captain Vaughan, of the 90th, who has since succumbed to his wounds. I confess it was impossible for me to stand the sight, which horrified our most experienced surgeons—the deadly, clammy stench, the smell of the gangrened wounds, of corrupt blood, of rotting flesh, were intolerable and odious beyond endurance. But what must the wounded have felt who were obliged to endure all this, and who passed away without a hand to give them a cup of water, or a voice to say one kindly word to them. Most of these men were wounded on Saturday—many perhaps on the Friday before—indeed, it is impossible to say how long they might have been there. In the hurry of their retreat, the Muscovites seem to have carried in dead men to get them out of the way, and to have put them upon the pallets in horrid mockery. So that his retreat was secured, the enemy cared but little for their wounded."

It ought to be remembered that Prince Gortschakoff wrote to the French General after the capture of the Malakoff, asking permission to carry off his wounded, and Gen. Pelissier refused.

The Russian organs try hard to make it out that the capture of the Malakoff and the evacuation of the south side of Sebastopol, were no disaster at all, but a great benefit. They say that their troops are now united in one strong spot, instead of being divided by an arm of the sea; and that there are other stragetic advantages, which render the change of position a great gain. All this fine-spun show of reason is destroyed by the saying of the Czar, " Russia never makes a peace after *a disaster.*"

The arrival of the Czar and Grand Dukes at Odessa looks like a vigorous prosecution of the war. A general levy of 300,000 is talked of as impending over the already suffering dominions of the Czar. At Nicolaieff several steamers are already under weigh to replace the splendid navy, burned and sunk in the harbor of Sebastopol. They are to be of the very largest size, equal to the "Agamemnon" in the English navy. At Odessa they fear an attack from the Allied fleet.

By the Atlantic, just arrived, (Oct. 18,) the leading events in connection with the war are, the quartering of deatchments of French and English troops in Sebastopol, and the fact that the Allied armies of operation threaten the Russian army, both from Eupatoria and Baidar. The French cavalry, under Gen. d'Allenville, defeated the Russians near Eupatoria, on the 29th. Russian loss, 50 killed and 105 prisoners; French, 6 killed and 27 wounded. A tough campaign is expected, as the Russians are making tremendous preparations, and the Emperor is still at Odessa. The fleet has sailed from Sebastopol on a secret expedition, it is supposed either to Nikolaieff or Odessa. Kars still held out, according to last accounts, though the provisions were nearly exhausted. It is expected, however, that the snow will compel the Russians soon to retire.

Extraordinary Sailing.—An Oswego paper of recent date gives an account of a close and exciting race on Lake Ontario, between two schooners. The vessels started from Trenton at the same time, and arrived at Oswego the next day, within a few moments of each other. They discharged cargo and left again together, and arrived at the wharf, at the Island, taking out their lines at the same time, and arrived inside the Oswego pier, side by side. On the same day they discharged their cargoes of 150,000 feet of lumber each, in eight hours; and, the last seen of them, they were some five miles off in the lake, side by side, crowding all sail for Trenton. We venture to say that this is the most spirited, protracted, and closest race that has ever occurred on the lakes. Their return is looked for with much interest.—*Mil. Free. Dem.*

Art. II.—STEAMER ARAGO.

FURTHER PARTICULARS, BY ERASTUS W. SMITH, RESIDENT ENGINEER TO THE NEW-YORK AND HAVRE STEAMSHIP COMPANY.

Diameter of Cylinders	65 inches.
Length of Stroke	10 feet.
Shafts of wrought iron, diameter of Crank Journal	19 inches.
Paddle-Wheels of iron, diameter	33 feet.

Two iron flue boilers, one forward the engine, the other aft, each affording 4,000 square feet of fire and heating surface. Boiler-shells back of furnaces cylindrical, diameter, 14 ft. 6 in.

Forward boiler, 29 ft. 3 in. long; double return drop flues, two tiers of furnaces, grate-bars, 5 ft. 6 in. and 7 ft. 6 in. long. After boiler, 28 ft. 5 in. long, single up return flues, two tiers of furnaces, grates in each, 6 ft. 6 in. long. Steam chimneys, 7 ft. 6 in. diameter, 12 ft. high. Shells of boilers of $\frac{3}{8}$ inch iron, double-riveted at bottom.

Surface of grate-bars, 650 square ft. Consumption of coal, 45 tons per 24 hours. Engines and boilers enclosed in water-tight bulkheads, extending fore and aft, and transverse the ship, of two thicknesses of plank cross-laid. Coal-bunkers on either side of engines and boilers, outside of bulkheads, communicating with fire rooms through door-ways, framed with iron, and closed with iron slide-gates. The advantages of such an arrangement in case of collision with vessels, rocks or icebergs, is incalculable.

The engine department is fitted with two very large steam fire and wrecking-pumps, capable of pumping 700 gallons per minute. They are three times the size commonly used in steamships, and were got up expressly for the Arago, by the builders of her machinery. They are provided with a small independent boiler for working in port, but at sea are worked by the main boilers.

The arrangement of engines is peculiar, and the first of the kind. The cylinders stand nearly opposite each other, fore and aft, inclining towards a vertical line through centre of shaft, when on their centres, an angle of 24°. The usual centre shaft, centre shaft cranks, and centre shaft pillow-blocks are dispensed with, the arrangement affording means of connecting at right angles, by means of a simple union-link; which is made of wrought iron, and forged in one piece. As the link suffers only a tensile strain, it is considered safer than a centre shaft, which suffers both a transverse and torsional strain. The performance of the union-link for two voyages has been highly satisfactory.

The steam and exhaust-valves are of the usual double beat or balance description. The valve chambers, induction and eduction pipes, are cast with

the cylinder, thereby realizing a very short and direct connection therewith. The rock shaft and valve-gear combine the latest improvements, and are fitted with "Allen's & Wells'" cut-off, which is adjustable for cutting off at different points of the stroke, by the hand of the engineer while the engine is in motion.

Until recent years, the oscillating engine was not considered so well adapted for ocean steamships as the side-lever, beam, and other stationary cylinder engines, extensively made in this country and Europe. The oscillators were considerably used in the latter place, but on a comparatively small scale, when they were invariably fitted with the slide steam and exhaust-valve, and if a separate expansion-valve was introduced, it was generally the old-fashioned swing-valve inserted in the steam pipe *outside* of the cylinder trunnion, which necessarily occasioned a great loss in the expansion of steam. Thus arranged, it could not compete in service for an equal amount of fuel, with similar size stationary cylinder engines, having better valve arrangements.

To American engineers, and chiefly to Horatio Allen, Esq., of the house of Stillman, Allen & Co., belongs the credit of modifying and improving the oscillating engine, until it now combines the same fuel-saving appendages to be found on the best stationary cylinder marine engines, while its efficiency in other respects is unimpaired; and it may be considered a successful competitor with the side-lever and other popular forms of engines.

American engineers can also take to themselves the credit of having led the way in building the *largest* oscillating engines. Stillman, Allen & Co., in 1851, built a pair of oscillators for the "Golden Gate," of 85 in. diameter of cylinder, and stroke of 9 ft. In 1852, they constructed a single oscillator for the "John L. Stevens," of 85 in. cylinder and 9 ft. stroke, and the following year, one for the "Augusta," of 85 in. cylinder, and 8 ft. stroke. Then followed the "Knoxville" and the "Arago," by the same builders.

When it is considered that in the arrangement of the "Arago," when compared with the side-lever double engines, similar to those of the Cunard and Collins steamers; two steam cylinder cross-heads, four cylinder side connecting-links, four side-levers, four cross-tail links, two connecting-rod cross-tails, two connecting-rods, two centre-shaft cranks, one centre-shaft, two centre-shaft pillow-blocks, in all 23 parts; of what may be considered the *harness* between the power and resistance, are dispensed with, and the piston-rod attached directly to the crank-pin; some idea of its simplicity may be conceived. The risk of breaking any one of the 23 parts above named, which would disable the engines, is avoided.

The Union Link, substituted to connect wheel-cranks in place of centre shaft, is the only part *added* between the piston-rod and paddle wheels, and that is so simple of construction as to create no fears of its frailty. The cylinder trunnions, which some eminent engineers have considered a questionable feature of the oscillating engine, have invariably worked well, and

I believe that none of the American marine oscillating engines have given difficulty from that source.

There being no beam in the arrangement through which the power is transmitted, the pressure on the cylinder trunnions is only one half what it would be on beam centre journals. The bearing surface of the trunnion journals must necessarily be large, to give sufficient capacity of steam and exhaust opening; and moreover, the current of steam constantly passing through the trunnions, when the engine is in motion, tends to keep them at a temperature corresponding with that of the circulating steam, and prevent them from accumulating heat of a higher degree.

The accompanying illustration is a correct likeness of the vessel and her rig.

Art. III.—SEA AND WAR STEAMERS.

Our remarks in the last issue, relative to the performance of the United States steamer Powhattan, has been the occasion of our having been favored with further particulars, both in relation to the vessel, and to the writer of the article in question, for which the Hon. Thomas B. Florence, and J. W. King, Esq., will please accept our thanks. Mr. King, however, desires us to say, that the author of the article on the performance of the United States steamer Powhattan, which appeared in the *Franklin Journal* of September, is absent from the country, consequent upon which our remarks cannot reach his notice for some months, and farther informs us that when he arrives in the United States, we will, beyond doubt, hear from him on the subject. Until then, we must be content with what we have at hand, furnished by the friends of the author of the article and from official reports.

The following extract from an article published in the *National Intelligencer*, more than two years ago, has been sent to us, intended as an offset, doubtless, to the remarks referred to. We cheerfully give it publicity, and hope to be so fortunate as to be able to answer the query with which it concludes:

"In the *National Intelligencer* of the 2d inst., Chief-Engineer Isherwood, of the United States Navy, gives what he conceives to be the average speed of various sea steamers *at sea*, and having been stationed at the Navy depot for some time, he has had a good opportunity to collect information, and may be presumed to be correct in his statements. The Collins steamers he puts down at an average speed of 11.4 knots per hour.

United States Steamer Powhattan	9.7 knots per hour.		
British war steamer Penelope	7.9	"	"
United States Steamer Mississippi	7.8	"	"
" " Susquehanna	7.4	"	"
" " Saranac	7.4	"	"

Published for the Nautical Magazine and Naval Journal

LITH OF ENDICOTT & Co N.Y.

NEW YORK AND HAVRE STEAM SHIP COS

U. S. MAIL STEAMER ARAGO.

2260 TONS.

These are side-wheel steamers which are of the greatest speed mentioned. At this rate, the Collins steamer would cross the Atlantic in 10 days and 13 hours.

The Powhattan	12 days	10	hours.
The Penelope	15 "	6	"
The Mississippi	15 "	10	"
The Susquehanna	16 "	7	"

The Collins steamers, consuming 85 tons of coal every 24 hours, would consume, in crossing the Atlantic, 896 tons coal.

The Powhattan, 40 tons	497 tons of coal.
The Susquehanna, 40 tons	653 "

The Collins steamers are about 25 feet longer than the other steamers mentioned, and about the same breadth of beam and an area of greatest transverse section as the Powhattan and Susquehanna. Those ships are alike in all respects, *except form.* They are war steamers with heavy ordnance, full-rigged frigates, ordnance and other stores for three years, spare spars, sails, and machinery, and provision and water for a crew of three hundred men, exclusive of 900 tons of coal. The Collins ships have nothing but a light rig, with coal and freight. Now suppose the tables be turned, and the Collins steamers take the equipment of the Powhattan, and she assume that of the Collins', what would be the result?"

With all due deference to the position of the writer of the above article, and his opportunities for collecting information,—we say that the average speed of the United States war steamers has been greatly overrated, as will appear manifest, when they are placed on the same route with the Collins line of steamers (as they should have been, if a test of speed for comparison was desirable). It would then be found to be a very different result. Cruising in the Pacific, in the Mediterranean, in the China Sea, or in the Gulf of Mexico, is by no means to be compared with crossing the Atlantic the year round, or at all seasons. If the Collins steamers had been rated as our war steamers have been, they might safely have been set down at 13 knots, while on the other hand, were the United States war steamers placed on the Atlantic route, the year through, they would not have exceeded an average of 6 knots per hour, as their logs will abundantly prove; but again, we are told in this article, that the Collins steamers have the *advantage* of 25 feet of length more than the Powhattan, or the war steamers mentioned, but perhaps the writer forgot to mention that they had also the *disadvantage* of 6 feet more of depth, and the weight of this 6 feet of depth the entire length of the ship, and the extra length, must all be carried by the ship, at great disadvantage. We deny the existence of the advantages claimed in this particular; increased length does not always indicate diminished absolute resistance, more particularly when the depth is increased to the full extent of the stability. But why select the Collins steamers for comparison, if they

have the advantage of length? Why not take an example from steamers of similar dimensions? The Georgia, for instance, with 10 feet less of length than the war steamers, and even faster in her day, than the Collins steamers, and whose route was in the Gulf of Mexico, where the war steamers have been testing their speed. If increased length is an *advantage* under any circumstances, surely the want of it is a *disadvantage* to an equal extent; if so, the advantage that the Georgia and the Collins steamers possessed, must have been in the model and not in the dimensions; hence it will not be a matter of surprise that we should have disclaimed the models of our war steamers.

But we are told in the above article, that the Powhattan and the Susquehanna were alike, except in model, in every respect; we are farther informed, that they are war steamers, provided with heavy ordnance, and being full-rigged frigates, they carry stores and *spare sails* for three years, with provisions and water for a crew of 300 men, exclusive of 900 tons of coal, all very well, and as it should be, but what has all this to do with the speed? We say just nothing in the sense referred to. The six feet of extra depth in the Collins steamers is a greater disadvantage in heavy weather, than double its weight in ordnance housed on deck; but the war steamers carry stores and water, as though the freighting steamers had nothing to carry but coal and passengers. How absurd to make a distinction between the influence of a ton of stores on freight, or an equal weight for use. If there is a difference, the war steamer has it in her favor, inasmuch as she is using her stores, and as a consequence, being daily relieved of part of her cargo. But the rig, spars, and sails are referred to, and the writer was unfortunate in this particular, inasmuch as he referred to *spare sails*. We would, in all candor, ask, if the spars were not carried to spread the sails upon? and if the sails were not made to fit the spars? and, again, we would enquire if the sails are not a part of the propulsory power, and if they are not like the engine, powerful in proportion to their size? Is it not, then, quite as consistent to fall out with, and repudiate, the size and weight of the engine and boilers of a steamer, as with her spars, rigging, and sails, more particularly, when we remember that these very sails, spars, and rigging, were used, and furnished *material aid* in making up the average speed, of which we have heard so much. It may be said that they are a great detriment to speed, when steaming in a head wind. We grant it, and also admit that they are a great advantage when the wind is fair, as all our war steamers have abundantly proved. What would we think of an officer in command of one of our sailing frigates, if he were to ask to have them removed on account of their deleterious influence in attaining speed. That they are unnecessarily heavy, we admit, but they conform to the *customs of the service*; hence it must be right, and it is equally true that the *speed* of our war steamers conform to the same *customs*. But the writer ends his article with a query—" and

supposing the tables were turned, and the Collins steamers take the equipment of the Powhattan, and she assume that of the Collins steamers, then," he inquires, "what would be the result?" We answer, that if they each remained in the same service in which they are now employed, neither would attain the speed they are now accredited for; and the reason is obvious, the Collins steamers having in their western route so little fair wind, the hindrance in head winds would be greater than the advantage in fair wind, while the war steamer always aiming to save coal, seeks a fair wind, and not being confined to a day and hour of sailing, takes the advantage of circumstances to make use of her sails, and if crippled in the spread of her canvas, would not attain the speed they now claim to have attained; but if, on the other hand, the steamers changed service, as well as spars and sails, the Collins steamers would be set down at 14 knots, as the average speed, while the Powhattan would claim only about 5, or at most 6 knots, as the average speed; and we would suggest that inasmuch as Naval engineers give so little credit to the model of vessels, and lay so much stress upon the armament and sails, that this transposition be made, when both the government, as well as its engineers, will have learned a lesson they have not yet acquired, in navigating the ocean by steam, as the following extracts from the logs of the Susquehanna and Powhattan, with the appended remarks, published by the Navy Department in answer to a resolution of the House of Representatives, will show, by reference to H. Doc. 65, page 12 and 13.

SUSQUEHANNA.

Maximum speed under steam alone.	Maximum speed under steam and sail.	Average speed for 20 days at sea, under steam and sail.	Average speed for 20 days at sea, under steam alone.
Feb. 1, '52. 10 knots at sea	Dec. 24, '52. 11.75 at sea	8.22 knots	7.63 knots

PERFORMANCES OF THE U. S. STEAM FRIGATE POWHATTAN ON HER PASSAGE TO THE EAST INDIES, 1853, RECENTLY RECEIVED.

	Hours.	Knots.	Average knots per hour.	Average coal in pounds per hour.	Remarks.
From Norfolk to Madeira	408	3.354	8.22	4,013	Weather unfavorable from March 8 to April 1.
From Madeira to St. Helena	572	3.256	5.69	1,375	Under sail alone for 13 days, from April 4 to April 14.
From Cape St. Helena to Cape Town	231	1.901	8.23	2,800	Fresh wind on bow whole distance, from April 28 to May 10.
From Cape Town to Mauritius	285	2.550	8.94	3,266	Weather favorable, fresh wind, heavy sea off the Cape, from May 27 to June 15.*
From Mauritius to Singapore	440	3.593	8.16	3,546	Running slow thro' Straits of Malacca.
Totals and means	1,936	14.654	7.85	3,000	A fair average of good and bad weather.
Totals and means excluding Madeira to St. Helena	1,354	11.408	8.36	3,506	

* Stopped at Pulo Penang, June 12, and banked fires for 19 hours

The difference in the relative performances of the two sister ships, Susquehanna and Powhattan, as given above, is partly, and perhaps wholly accounted for, by stating that only one quarterly log had been received from the latter vessel, and that during the whole of that time she was employed as a *dispatch vessel*, and consequently had more attention paid to, and advantages taken for speed, than if she had been a cruiser. She was also highly favored with smooth seas and moderate weather, while the logs from the Susquehanna cover a period of eighteen months, during which she was employed as a cruiser to and on the East India station.

Art. IV.—SLIDE KEELS, OR CENTRE-BOARDS.

We continue our remarks on keels adapted to coasting vessels. Of the several contrivances for increasing the lateral resistance of sloops, schooners, and all vessels of light draught of water, the centre-board, or slide keel, has been found, in practice, the most efficient and simple instrument. It consists of strong plank bolted edgewise together, and hung on a bolt near the forward end, working within a trunk, or well, frequently called the centre-box, drops through the keel, or bottom, of the vessel, and hangs with one end down in a diagonal direction into the clear, undisturbed water, below that through which the vessel passes when under sail.

By persons unacquainted with the details of such a contrivance, it will be perceived that the timbers of the floor must, necessarily, be cut off in the length for which the centre-board extends, in a fore and aft direction, thereby greatly decreasing the transverse strength of the vessel's bottom, unless floors of extra size, or number, be supplied immediately at each end of the trunk, which is usually done. It is not unfrequently the case that the board is made of such length as to require that one-third of all the floors crossing the keel be cut off to admit its passage through the bottom, yet we have seldom been able to discover, when extra floor section has been added at the ends of the trunk, that the transverse strength of the vessel suffered materially in consequence; an indication, we think, that nearly all vessels are overstocked with this quality in the locality under consideration.

We intend these remarks to apply only while the vessels are afloat, or sustained by the fluid.

The invention of the centre-board is due to the genius of a Philadelphia mechanic, and was first applied on small sail vessels and pleasure boats. Its introduction has been gradually extended in vessels navigating shoal waters, until now it may be found in general use by the shipping of the great lakes, where sail vessels of 750 tons can be found. The largest centre-boards of which we have any knowledge may be set down at 28 or 30 feet in length, 13 or 14 feet in width, and 6½ or 7 inches thick. The

aft end is raised into the box, or trunk, when required, by means of a winch.

Like every other part of a vessel, the proportionate area of centre-board varies with the designs of builders. Its location in a fore-and-aft direction, as well as its position athwart ships is liable to the same remark—in some vessels being placed considerably forward of the middle of length, in others more nearly amidships, and sometimes dropped through the middle of the keel, and in many instances by the side of it. Vessels having centre-boards seldom have more than five inches outstanding keel, and, unless the deficiency be fully made up in keelsons, are apt to have a *tender spine*, notwithstanding the rigidity furnished by the box, or trunk, in the course of its length. We have seen the keelson *butted* against the box in small vessels of cheap construction. When the board is placed at one side of the keel, the keelson has an unobstructed range from stem to stern, and the box does not then interfere with the position of the mainmast, which is usually compelled to take its step a few feet farther aft than in keel vessels of the same rig, in order to admit the centre-board in its best working locality. In consequence, the fore boom, if a schooner, is made longer, and the main boom shorter, than when the keel is adopted; and, contrary to the opinions of many, who may never have been obliged to rig vessels according to the modifications of necessity, no difficulty whatever is experienced in executing the manœuvres of seamanship. There are many centre-board vessels that will work well either close hauled, or with free sheets, under their foresail only.

When the board is to be dropped through the middle of the keel, either one or two large square logs are taken to form the midship piece of keel, which must be deep enough to come above the ceiling at the timbers, in order to give a fair opportunity to caulk the lowest seam of the box, or trunk. A cavity of sufficient length not only to admit the centre-board, but the vertical insertion of trunk head-pieces, which shoulder for a few inches upon the keel, and pass quite through it, forming timbers for the ends of the trunk, to, and through which the plank of the same are fastened, is made through the keel about half an inch wider than the thickness of the centre-board. The floor ends of the half frames are inserted into dove-tailed mortices in the sides of the keel, from three to five inches deep, keyed firmly, and bolted. A thick garboard fastened to the keel and floor ends is sometimes worked, to give additional security and support to this part. In a wide flat vessel it is well to work a keelson at the short floor head, in addition to the usual thick bilge strakes, or bilge keelsons, as they are frequently denominated. The best manner of working the centre keelson is to make it form the sides of trunk as well as keelson, by locating a scarph about the middle of the trunk, and cutting an opening for the passage of the centre-board in the same manner as was done with the keel. Thus it will

be seen, that in effect, the keel and keelson, having been enlarged, are morticed for the opening through the vessel, and she may now be quite as strong longitudinally as the keel vessel, if the job be properly done. For the construction of large vessels, it is difficult to find timber of sufficient length and size to form the midship piece of keel, and consequently, either two logs are taken and bolted together, or the centre-board is dropped by the side of the keel. In the latter case the keel and keelson form one side of the trunk, so far as they extend in height, and a stick of timber is prepared to form the opening of the other side. It extends below the timbers, to come flush with the planking, and above, so as to bring the lower seam of box above the ceiling. The ends of floors are dove-tailed into it in the same manner as before described. The main principle to be kept in view in building centre-board boxes, or trunks, is to expose all the seams free for re-caulking; to have as few as possible; and to make good ones. The very best mode of fastening should be adopted, without sparing the iron, for to this cause, and to violation of the above rule, should be attributed the ground of frequent complaints against the leaking propensities of centre-board boxes, or trunks. The leverage of the centre-board to open the vessel at this point is nearly equal to the strength of the board, and in cases where it is broken quite as great. It furnishes one of the most powerfully straining agencies adopted on shipboard, and cannot be too well secured. The centre-board trunk is usually built quite up to the bottom of the beams, and covered with a plank before putting in the beams, which are bolted to the trunk, and thus secure it at the upper part. If the vessel be quite shallow in the hold, it is the custom to build the trunk up to the upper side of the beams, and cover it on deck—this is done to gain a few inches more in width to the centre-board. It is also customary in many vessels on the sea-coast to cut off one or two beams over the aft end of the trunk, and allow the centre-board to come above the deck, in the trunk, thus adding a still greater proportion of breadth to the aft end of the board, which is the end that drops into the water, and obtaining the requisite surface of board without too greatly extending its length. Oak is the wood generally used to build trunks and centre-boards. We have built trunks of hackmatack plank, one inch thicker than if built of oak, and learn that others have done so. We think it is best, in many cases. The board should be banded on the lower and after edges with flat iron, and the wood tapered off to three-fourths the thickness on those edges. It should be hung so as to drop two-thirds out of the box when the vessel is sailing, and, like the sails, is to be *reefed* when the sea causes the vessel to labor—when there is danger of carrying it away, or springing the box and consequently causing a leak. The hanging bolt may be placed about two-fifths the breadth of the board from the bottom edge, and nearly the same distance from the fore end. The corners are rounded off to admit it to play freely in the trunk. Centre-boards are

frequently broke by allowing the vessel to strike the bottom before they are hauled up.

In three-masted-vessels two centre-boards have been used, but no longer find favor with seamen who have had experience with them; they do not work satisfactorily. The *location* of the centre-board is the most difficult part of the problem with the builder, inasmuch as it furnishes the chief means of preventing leeway, or, in other words, the greatest proportion of *lateral resistance*, without which there can be very little done "by the wind." The position of the centre of buoyancy, the proportionate amount of *lifting* power on the bow, and the fore and aft locality of the centre of absolute resistance due to the model, must each be heard in determining the place of a fourth central point, upon all which a fifth, viz., the centre of effort of sail, will be dependent. If the centre of buoyancy be found forward of mid-load line, the lifting power be small, and the chief load of resistance impinge upon the anterior portion of the fore body, the centre of gravity of the exposed portion of the board, when down, should be kept near the mid-length of the vessel; otherwise, if it be placed too far forward, it increases the necessity for head sail, already sufficiently imperative in the model supposed, and if enough be furnished to prevent *ardency*, or "griping," the vessel will labor at a hazardous disadvantage, and never sail as well as she ought. If the centre of buoyancy be found at, or abaft the middle of load line, the lifting power be great on bow, and the bow be long with hollow level lines, and the sharpest end of vessel be forward, we must also keep the centre-board near the middle of the vessel—we mean the centre of gravity of the drop part of the board—but for different reasons. In the first case we kept it aft (we speak of keeping it *aft* because it is frequently placed too far forward) in order to accommodate the *lifting power*, which was deficient, and head sail would, by its leverage, increase the mischief and labor of the vessel, and the lateral resistance should therefore be kept abaft of the centre of buoyancy. It is for this reason that a "long run aft" requires to be given, together with a "trim by the stern," to short, full bowed vessels, in order to make them "sail," and "steer," which we hear so much about from advocates of old fashioned models. The centre-board must come aft on such models, seeing that we have shoal water, and cannot afford to have a vessel sail upon her heel. On the sharp, swift vessel, the centre-board requires to be placed equally far aft, or near the centre of buoyancy, because the centre of sail must find its position above this point. It may therefore be laid down as a rule, we know of no better, that the centre of resistance of board should always be placed at, or abaft, of the centre of buoyancy, except, perhaps, in badly disproportioned models, or in cases where a full bow may also have great lifting power, which sometimes happens, even when the trim is on even draught. From one-fifth to one-fourth of the length on load line may be taken for the pro-

portionate length of centre-board; and the wider the vessel the greater should be the proportionate length of centre-board as a general principle.

It is our opinion, that if centre-boards and trunks were built of *plate iron* instead of wood, and the work well done, an improvement would be made. Centre-board vessels are unpopular with New-York underwriters; but what would they do on the lakes, where they would be called upon to insure nothing else but centre-board vessels in the line of sail craft?

(*To be continued.*)

Art. V.—NAVAL ARCHITECTURE.

We are pleased to be able to introduce to the readers of the Magazine a valuable correspondent, who has placed at our disposal some papers on Naval Architecture, over the name of PHINEAS PETT, who was the first master-warden of a chartered incorporation, denominated "The Commonalty of the Art or Mystery of the Ship-wrights of England." The charter was dated May, 1612, and the drafts for all vessels built for the English Navy had to be approved by this corporation before built from. Thus by hereditary distinction, the modelling of the British Navy was confined to the family of Petts, for nearly one hundred years, down to the end of the reign of William III.

In order that our readers may be able to digest and profit by these papers, we shall follow each communication with such remarks as we may feel ourselves called upon to make in reply. We hope others will follow this example, and compare what they know with what has been already learned; and over their own proper signature, whether to be attached to the article or not, as they may prefer, give the world their boldest thoughts and best exertions, toward making the science of ship-building what it should be, and second to none within the range of physical development—an honor to our country and a blessing to the world.

PAPERS ON NAVAL ARCHITECTURE.

BY PHINEAS PETT.

One would imagine, from the experience of the past, we could glean something which might help us in our researches upon this subject. But all seems mysterious. Now and then we get a hint. The trouble lies in too much concealment, and at the same time, like a good many other things, the science was so small, that to expose it to vulgar eyes was ruinous. But all we can gain shows us the whole to have been conducted with a very slight knowledge of the elementary principles of all science, and even at the present time how much would any of us weigh in the balance against sound first principles!

The perfect ship is not yet discovered to us, and although we may have found and passed it over and over again, we knew it not. Now our science should point, like the hands of a clock, the exact mark, or it is useless. How, then, shall we arrive at this point? It can be done, but how? I answer, when the mystery is dispensed with, and when all, acknowledging their want, shall be willing to pour into one general repository, for the benefit of the future, their present knowledge and experience. Let these be compared and analyzed in a systematic and scientific manner, and a splendid truth will be revealed. Then, and not till then, will Naval Architecture become a real science. Now, it is the duty of every man to record his experience; and nothing, even his thoughts, should escape unnoticed. Many a truth is given to us and lost again, merely because we will not take care of it. If they were gold instead of thoughts we would not let them slip us so easily. Let us pocket our thoughts, then; they may benefit some one, if not ourselves. If it was in the power of one person who was well skilled in the business, and whose means and influence were extensive enough, he might travel all through the various departments and countries which ever had anything to do upon this subject, and let all help him with a good will, and I will warrant deductions as sure as the sunshine at noon-day. Then, instead of denouncing the "musty folios of the past," as one has expressed it, we might, from the past history, deduce general results of real value. How foolish to denounce the past as humbug, when we are in exactly the same light at present! How can we ever learn in this spirit? Our predecessors in this business learned from those who went before them. From whom did we learn? Was it not from the past? Then why denounce our best friend? Would we owe nothing to our parents? That is like the son who, becoming rich in a path which his father had pointed out, when he (the son) becomes satiated, he turns round and calls the old man a humbug, for, says he, I could have discovered as much as this, and more if I had been left alone.—Humbug!

It is sickening to see the personal vanity of each individual, author himself included, who attempts to write upon this subject. They alone are right. They alone have found the acme. They have found the fountain to which all must come and drink if they would live. The greatest man, as well as the greatest writer upon this subject, in our opinion, was Chapman, the Swede. He takes a bold stand. His deductions are clear so far as his then knowledge would allow him to go. One other man in the present day, with this perseverance, would make us live again in the science of Naval Architecture. Let such an one appear. Confusion seems to be the aim of most writers upon this subject. They are lost in their attempts to prove results that they do not understand. Even Chapman attempts too much when he makes a formula whereby we can calculate the resistance of a ship. A writer upon Naval Architecture, if he will but be explicit, avoiding as

much humbug as possible, and consistent with the end, may accomplish some good results.

Our plan, then, is to analyze and compare. We will then see what progress we have made, if any, and deduce from our comparisons what knowledge we can. The best method known to the author to accomplish this is Pook's system of comparison of lines. From this method we may deduce a system whose basis is the knowledge of the past brought immediately before us and compared with the present. And as various writers and our own experience prove that more depends upon proportions than absolute form, proportions of the past and present shall be taken into account in this analysis. We are all aware that unless the body is well proportioned, and that proportion must alter more or less with the form, it is not good. We have seen and exemplified this over and over again. We have, then, this truth well established, that all known forms of bodies which are used in Naval Architecture will move equally well, provided they have the same displacement—this is so far as speed is concerned—and also that the true proportion proper for that form be only discovered, and the moving power be properly applied. This we shall see, and this will make many of our wise doctors look aghast when they see themselves thus reflected upon. It only remains for us to establish those proportions proper for these various formed bodies; for all are good and well adapted to various purposes. That Naval Architect knows but little who confines himself to one idea, and labors and hammers upon that his life long, in his endeavors to apply that one idea to all desired ends. He fools himself as well as the public with the idea that there is but one true form. Who that has observed has not seen forms exactly opposite, but, when well proportioned, do equally well. There are many such cases on record, and it only remains to collect them. Let us establish one point and make that the basis of our operations. Let everything else become subservient to it. The question is, What is a ship? The answer, That which best answers the particular purpose for which it was designed. Then let our first design be for a cotton ship. Suppose we wish to construct a cotton ship to custom-house register, 100,000 cubic feet of cotton. Our first point to examine is proportion. Form we throw one side here, that is, form for speed, and what we want is the best proportioned box we can make that it is possible to navigate safely, and still not draw over a certain draught of water. What then must be the dimensions? Now it is very desirable that a cotton ship should not draw over 17 feet of water. A bale of compressed North Carolina cotton we may calculate at 25 cubic feet, or 450 pounds, which gives us 18 pounds per cubic foot, which gives us a weight of 1,800,000 pounds avoirdupois, divided by 2,240 pounds (per ton of sea water) about 804 tons required for cargo alone. We may approximate the weight of this ship and call it 755 tons of 2,240 pounds. This makes our displacement at 17 feet draught require 1,574 tons, and 200 tons to be added for ballast, make

1,674 tons. Now, what dimensions must we assume to obtain our end? and we must bear in mind that this same ship, on her homeward voyage, will carry iron; therefore it would be very dangerous to make this vessel too wide and shoal. We must also bear in mind that we want the most we can obtain from our dimensions, that is, the largest possible displacement consistent with safety and fair sailing qualities, speed being but of little account. Our keel, measuring about 14 inches in depth, there remains 15 feet 8 inches of ship. Let us calculate at 16 feet. We will assume the extreme breadth to be 36 feet; length 180, $36 \times 180 \times 16 = 103{,}680$ cubic feet $\div 35$ cubic feet per ton $= 2{,}962$ tons whole cube. PHINEAS PETT.

(*To be continued.*)

REPLY.

Our correspondent thinks that the "musty folios" of the past should not be denounced; in this particular we agree with him, but the world has never been at fault on this point, even in the United States, where the watchword is ever something new, the whims and silly prejudices of our ancestors are clearly discernible in our ships; and if ship-builders have not been as hard students of science as they should have been, they have, with few exceptions, not failed to follow in the leading-strings of their tutors.

We call this an age of improvements in ship-building as well as in other arts; but what improvements have been made in the United States, which were directly consequent upon what has been published prior to the middle of the nineteenth century, or the year 1850? It would be more difficult to find the improvements called for, than to make them. It must be clear to every mind that if we are to follow in the wake of our ancestors, we shall always be, as we always have been in the science of ship-building, *behind the age.* The next generation should take what little there is of science already attained in ship-building where the present generation leave it, and not where they found it, and had they done so by Chapman, the world would have been far, very far in advance of where it now is. The writer tells us that the best method known to him is that of Mr. Pook's, which is that of deducing a system whose basis is a knowledge of the past brought immediately before us, and compared with the present. We are indeed at a loss to know how a progressive science is to be inducted into the commercial world based on the past, while it is a well-known truth that the past from which these deductions are drawn have no basis in the principles of science, and instead of determining the best form, this rule only aspires to remain within a series of forms, which the tooth of time has placed far behind the age, and while it is a notorious truth that the laws of science had not been consulted in the production of those very forms, as we shall attempt to show. This rule is based on the formation of a series of curves, gathered from the body plans of a number of vessels, and reduced to a scale

of curvatures for the frames. Within the compass of a selection made for this purpose, may be found all the variety of models which a selection of 50 or 100 vessels can furnish; the fullest and the sharpest are the extremes of this sliding scale of frames, so apportioned that fair longitudinal lines must inevitably be the result, each of which has an exponent. We will suppose that these models were the best the age had produced at the time of making the rule: now, inasmuch as the stream can rise no higher than the fountain, it is clear that no improvement beyond that contained in the models from which the scale was made can be expected from this rule. But we are told by our correspondent that we may have passed over the synthesis of a perfect ship, and at the same time be ignorant of the fact, from which we may infer that he means, that in all probability the perfect ship lies within the forms selected for this rule; but in reply we say, that the rule furnishes no index for finding it, in case it should be there, and if it is not there, what then? Why just this: we would be better without the rule than with it; but again, we take the responsibility of saying, that it is not there, and could by no possibility exist there, or in any number of vessels that have been built since this rule was made; and now for the reason why. It is a well-known truth that all vessels which are now built, or are being built, are the result of previously selected principal dimensions; that is to say, the length, breadth and depth, have *first* been determined, either by the builder or by the owner; this practice is consequent upon the rules of measurement for tonnage; hence it must of necessity follow, that the whole ground-work is wrong for giving perfected shape to the bodies of vessels; and any rule made upon such basis can only facilitate the mode of giving form to the vessel without approximating perfection of design, and is very similar in its influence upon *science* to that which would be the result upon the *morals* of a community whose standard of length, breadth and thickness was of *India rubber*, subject to an extension or contraction to accommodate the wants of the purchaser both in price and bulk. This is precisely the course pursued in seeking perfected shape by this rule, or any other which takes cognizance of principal dimensions. But we may be told that there is an almost infinite variety of shapes contained within the orbit of this rule, and that the best shapes may not yet have been produced; we grant the variety, but do not admit the deductions. We say that the perfected shape will be found to conform to the laws of nature; and it is too plain to every unsophisticated mind that nature's laws have nothing to do with any form which is the result of principal dimensions selected to determine tonnage. The *form must determine the dimensions, and not the dimensions the form. The practice has been to consult tonnage laws rather than nature's laws.* The full ends and the straight side have been adopted as the tonnage laws have directed; vessels must be narrow and straight-sided, and if the ends are not considered full, they are too full to do that which they

are designed to do. If the middle of length is the largest proportionate part of the vessel, why does not the water rise higher at that part, than at the bow? If we will but give the subject a moment's reflection, we shall see that it is because the bow is proportionately fuller than the middle; and is it not plain that with this rule, or any other rule confined to present form, there can be no such thing as science? It is like ringing changes on a series of bells; however many may be rung, there can be no music—so long as the tone is imperfect, they are the same bells still. But we are told that it will not answer to make vessels wider and sharper at the ends, for two reasons; first, they would be unprofitable, inasmuch as they would not carry enough; and, second, they would be very uneasy, and, as a consequence, unsafe. It is a most singular fact that the American coasting-vessels are the best sea-boats, fastest and most profitable sailing-vessels that can be found, and yet they are wide and shallow, and, consequently, very buoyant; yet we hear no one complain of their being too wide, or that their width makes them unsafe; or that because the best and most profitable of them carry no ballast, they are, as a consequence, dangerous. But as soon as they are changed in rig from a schooner to a ship, though it be the same vessel, we hear about the dangers of breadth—the consequence of carrying no ballast; the real cause is want of stability, consequent upon the enlarged top side—so that now she must carry ballast below to balance the ballast above. The truth lies here—the vessel of one deck, as our coasting-vessels are built, are measured as they are, that is to say, the depth is measured for the depth, and the breadth for the breadth; but as soon as it is found necessary to have two decks, then the depth is not measured, while the breadth must determine the tonnage, inasmuch as the narrower the vessel, the less she measures, while as her depth is increased her stability is diminished, but as the depth is not measured, it is supposed to be a gain; hence the reason for advocating ballast as soon as the rig is changed, and the number of decks amount to more than one, even though it be the same bottom which had proved to be so profitable and comfortable without ballast. We would pause to inquire what proportion of science there is being developed in all this? and how soon ship-builders will be able, in all probability, to produce a perfect form under such a code of laws and rules of practice? Is it not clear to the unbiased mind that we are rearing bulwarks, or prohibitory tariffs, which, while they exist, will forever shut out the light of science, and keep ship-building in an infantile state? If a vessel requires ballast, give her a sufficiency by all means; but let us be careful that our own next vessel is not freighted with this unprofitable and useless incumbrance; natural stability is always better than artificial when the vessel has been adapted to the service intended, without reference to rules or precedents.

For the U. S. Nautical Magazine and Naval Journal.

Art. VI.—NAVAL AND NAUTICAL.

Messrs. Editors.—I congratulate you on the happy association which you have formed of what is so closely allied, in that oneness of interest which so peculiarly distinguishes American seamen. To be naval it is necessary to be nautical; be nautical then, in order to be naval. From the destruction of the *tea* to the present time, American sailors have deemed and *demeaned* themselves as something more than having enlisted in a service for their own livelihood. Proud as our Navy justly is of its achievements, it claims neither the first voyages of exploration nor the first naval battles made and won from our shores. More than two hundred years ago, our sailors, in periaguas and sloops, with anchors lashed to their bows, armed with stones, fowling-pieces, and duck-shot, too well distinguished themselves in both nautical and naval affairs to be considered as solely belonging to either. Professional skill in either branch is a valuable acquisition and facility for whatever pertains to the other. To be a watch-officer in the Navy without being a seaman, or to be a seaman without the skill and daring which the courage-inspiring element of the sea instils, is equally incongruous—hence we hail this as an ominous union for the perfection of a profession so noble and so glorious. One of the first successes in the struggle of the Revolution was gained by the fishermen of Providence, in launches armed with paving-stones, against a man-of-war schooner, the "Gaspe," which had been stationed by the British to enforce the navigation act. The capture of the war schooner "Margaretta" by the coasters of Machias, in a lumber sloop, principally armed with axes and pitchforks, was as signal. Many other adventures of like nature might be cited for examples of such men as formed the first *personel* of our Navy, by *earning* their rank and commissions. From the hoisting of the first American ensign by the hands of Paul Jones to the present time, the same traits and qualifications which gained for him the appointment of first lieutenant to the "Alfred," have distinguished the American seaman, whether in or out of the Navy. The noble example of such apprentice boys as Richard Dale, who "resolved never to put himself in the way of the balls of his country," but with alacrity put himself in the way of an enemy's; and the gallant *coxswain*, Nicholas Biddle; and Barry, who could not be seduced from the cause of his country by the value and command of a British fleet; and the pilot boy Barney, and a multitude of others who have distinguished themselves equally as seamen and commanders—aye, even some such, still in the Navy, bespeak that common apprenticeship to the sea, where such laurels have been won, as do, and should ever inspire the spirit of every American sailor to emulate such examples as have secured for the ship the protection of her ensign on the highway of the world.

Merchant.

New-York, *Oct.* 15, 1855.

Art. VII.—SAFETY RAFT.

We are indebted to the New-Bedford *Mercury* for a description of what has been denominated a "safety raft," the invention of Mr. Henry Evans, of that city, designed and adapted to all descriptions of sea-going vessels:—

"This raft is made to form the top of the saloon, or as it is variously called 'promenade deck, hurricane deck, or spar deck.' It is secured in such a way, that it can be detached in a few minutes, and is ready to float off, though the vessel should sink under it. This plan, it is said, has been approved of by Com. Perry, Captain Comstock, of the steamer Baltic, and other experienced nautical men, as well as by some of the first commercial houses in England. The construction is so simple, that it can be applied to vessels already built, and at a trifling expense. Great strength, it is said, is combined with equal buoyancy in this design, and in building new vessels, the substitution of the 'Evans' deck,' for the old form, would involve little, if any, additional cost.

"Upon this raft may be stowed a supply of bread and water, sails, masts, compasses and other essentials, without any encumbrance of the deck of the saloon. The plan may be also applied to every house above the deck, and also to the paddle-boxes. It is not proposed to dispense with the life-boats now carried, but to provide for a temporary refuge for the first panic of a sudden peril. This great desideratum in time of danger, is means of escape that is neither so complicated nor so imperfect as to require a great deal of energy and presence of mind. The crew are left at liberty to do all that may be done for the preservation of the vessel, to get boats into the water quietly and safely, while the passengers are out of danger upon a raft, which 'a few minutes puts in entire readiness for service.' Its usefulness, we understand, is not confined to ocean vessels only, but the 'raft' is also designed for lake and river steamers. We know of no more praiseworthy invention than the Evans' Raft, which, if it fulfils its lofty promise, will be of incalculable service to the travelling community."

It is indeed strange that so much effort should be made to find a substitute for the ship itself in times of danger; boats, rafts and life-preservers are the order of the day, while the ship itself (which should be a *life boat* in the fullest and every sense of that term) is but a *shell;* perforate it anywhere while at sea, and the consequences are too often fatal. We maintain that if the ship is what it should be, no contingency would arise, in which this "Safety Raft" would be of any service. If the ship were a life-boat, there would be no occasion for leaving her at sea, unless on *fire* or on the *beach;* in neither of these cases would this raft answer the purpose designed. The remedy is indeed simple; let every wooden as well as iron vessel be furnished with iron transverse water tight bulkheads, and an iron keelson; thus provided, the ocean traveling public would have no disquietude in reference to the best means of escaping from the vessel. The ship, which is now, alas, too often regarded in times of danger with distrust,

would then be regarded in a very different light; she would then wrestle with the ocean tempest or brave the peril of a collision; being strengthened at her weakest point by the iron keelson, as described in vol. ii., number 6, of the NAUTICAL MAGAZINE, she would be prepared for transverse bulkheads of iron, which, unlike those of wood, when once made tight by caulking, would remain so, and not be liable to consumption by fire, and at the same time they would be lighter and less bulky.

Since the time we first selected the *ship* as the best and safest means of conveyance for our little stock of knowledge across the ocean of life, we have a thousand times discovered abundant room for improving her qualities and increasing her safety, but never have found just cause for deserting her, or for substituting a raft in her stead, nor do we expect to.

Art. VIII.—HISTORICAL SKETCHES OF SHIP-BUILDING.

NO. I.

IN attempting these sketches of our favorite art, we shall confine ourselves to an outline of a few facts collected from various historians, in illustration of the probable size and nature of the shipping of the ancient world, and the progress of ship-building thence down to the present day. We shall endeavor to describe what little is known of the rude vessels which, during the darkness of the middle ages, bore the marauders of the northern European nations on their predatory excursions, carrying desolation and misery throughout the coasts of Europe, rooting out the relics of more ancient civilization, and laying the foundations of empires which were destined, in their turn, to civilize the world and give impetus to the progress of mankind. In the disclosures of maritime history, we think the reader will not fail to find a correct index of man's advancing pace toward power, wealth and independence, the only sure foundation for the superstructure of liberty, learning and wisdom.

It is no more strange than true, that the essential qualities of a nation's character are portrayed in their ships—these are their universal representatives in the remotest parts of the globe, and these their monuments of power, of intelligence, and of wealth, which impress greatness and grandeur on the foreign mind. Let us, therefore, cherish this noble art, which, more than any other enterprise of our people, has given strength and lustre to the American name in every land, and on every sea.

Of all the nations that have ever made their mark upon the page of history, none have attained to a more exalted pitch of power and greatness than Great Britain, and none can point to a more interesting history of naval architecture, whether we examine her fleets of war or her argosies of peace. As the parent country of the United States, we must look to the ship-

building of the British Isles for the germs of our own greatness, which in the short space of less than fifty years has experienced a growth commensurate only with the rich soil of our institutions, and the free culture of the expansive genius of our mechanics, and which places the mercantile navy of the New World side by side a successful rival with that ancient maritime power, whose boast has been to "rule the seas," beneath a flag that "for a thousand years has braved the battle and the breeze."

The history of ship or vessel-building previous to the foundation of Rome, is founded on conjecture. From the foundation of Rome to the destruction of Carthage, the facts are less obscure, but too much difficulty exists in selecting the testimony of various authors, to invest the history of this period with certainty. From this time forward the condition of the art may be pretty well described.

The discovery of the mariner's compass, the discovery of cannon, and their adaptation to naval warfare, and the discovery of the New World, successively serve to heighten the importance of ship-building, by establishing navigation as one of the most vital wants of nations, and thus placing the art of marine construction beyond the vicissitudes of piratical excursions upon the contracted waters of Europe.

Concerning the state of ship-building among the nations of antiquity, investigations prove that their fleets, whether for war or for commerce, consisted almost entirely of vessels whose principal mode of propulsion was by the use of oars. On the authority of Plutarch, as many as fifty distinct banks of oars were applied on some of the more modern of these vessels, but more generally three, four, or five banks, or tiers of rowers, one tier above another, placed obliquely, served to pull these vessels from port to port. These vessels were called galleys, and were sometimes built at a great length, exceeding any open vessel of the present day.

At the siege of Troy, 1184 years B. C., the Grecian flotilla consisted of 1,200 vessels, or open row-boats, the largest of which contained 150, and the smallest 50 persons.

A great improvement upon these must have been made in the fleets of the Corcyrians and Corinthians, between whom took place the first naval battle on record, which occurred about 2505 years ago, because at that time the arrangement of the oars in banks had been adopted. It is generally agreed that Amiocles, the "shipwright of Corinth," was the inventor of the "trireme," as the boat was called which was propelled by three banks of oars. The Carthaginians invented methods for introducing a still greater number of oars arranged in banks, but, strange enough, seemed not to have discovered the value of the wind for propulsory purposes at this early day, or till after perfection in the application of oars had been pretty fairly attained.

At the battle of Salamis, 480 years B. C., the largest Grecian vessels car-

ried only 18 soldiers, exclusive of the rowers and sailors. Their *models* are described to have been of the "round manner of building." The whole of the Grecian vessels appear to have been only half decked; the soldiers were stationed on platforms at each extremity, the middle of the boat being left open for the rowers. Cimon, the celebrated Athenian commander, was the first to join these two platforms, and thus to form a perfect deck, for the purpose of opposing a stronger armed force to the Persians. This took place 470 B. C. This improvement became permanent in all the larger vessels of those times.

The construction of vessels up to this period was evidently very slight, nor were they of any considerable size. The largest of which we have particular account were built more for ostentation than utility, as it is plain that it could not be profitable to employ large row-vessels for any purpose, and we do not find the size of ancient shipping materially increased until the invention and general adoption of sails. Fifty or sixty were quite sufficient to occupy all the space afforded for accommodations, even in the time of Alexander the Great.

The Carthaginians appear to have excelled every other people of antiquity for their marine and commercial enterprise. They inherited their nautical genius from their progenitors, the Phœnicians, of whose commercial wealth history, both sacred and profane, gives repeated evidence. Ezekiel says of Tyre, "It is situated at the entry of the sea, is a merchant for many isles; its ship-boards are of fir-trees of Senir, their masts of cedars, their oars of oak of Bashan, their benches of ivory, and their sails of fine embroidered linen." These "sails" were doubtless long and broad pennants, or flags intended more for ornament than use.

At a very early period the Carthaginians possessed vessels of considerable magnitude, for at 350 B. C., when Hanno's voyage was undertaken, sixty ships are said to have held 30,000 souls, with all the stores and requisites for colonization; but we consider this statement unreliable. We know but little of this people, however, except what is derived through their implacable foes, the Romans, who built their first fleet after the model of a Carthaginian vessel. This was a war-galley, but the Romans, who despised commerce, preserved no memorial in their shipping of the marine skill of their conquered rivals.

The naval triremes or galleys of the Romans were 105 feet long, and 11 feet broad. The quadriremes were 125 feet long, and 13 feet broad; or about the size of the largest class canal boats in the United States. The triremes, after the time of Julius Cæsar, were 90 feet long, and 10 feet broad. In more modern times, the Neapolitan and Maltese galleys were built broader in proportion to length, and are said to have been capable of performing voyages by the oar of 180 miles in 24 hours, or 7½ miles per hour The distance from Naples to Palermo has been performed in 17 hours—distance about 140 miles.

The first Roman fleet was launched in 60 days from the time of cutting the timber, and consisted of 160 galleys, each carrying 500 men. At the time of the first Punic war the Roman fleet is stated to have consisted of 330 vessels, each containing 300 rowers, and 120 soldiers. Yet such a naval force becomes insignificant when compared with that cf Greece centuries before. The Roman ships were divided into three classes, according to their uses, much as they are at the present day, viz.: ships of *war*, ships of *burthen*, and ships of *velocity*. The latter constituted express boats to convey tidings or important personages.

These vessels were invariably built of pine, cedar, or other light woods, excepting about the bows, which were of oak, strongly clamped and strengthened with iron or brass, in order to withstand the shock of opposing vessels: the naval tactics being comprised in the attempt to sink or damage the enemy's vessel, by violently propelling this armed bow against the weaker broadside of the enemy, or else endeavoring to break and cripple the oars. Oak was first applied to the construction of vessels by the ship-builders of Venice. Copper or brass was first introduced for fastenings, in consequence of the quick corrosion of the iron, about the time of Nero: and flax was also used for the purpose of caulking the seams of the plank.

Trajan's ship, which was sunk in the lake of Riccia, and had lain neglected for above thirteen years before it was raised, is thus described by Locke: The pine and cypress of it had lasted most remarkably. On the outside it was built with double planks, daubed over with Greek pitch, caulked with linen rags, and over all a sheet of lead fastened on with little copper nails."

This slight sketch of ship-building embraces a pretty fair outline of the art before the downfall of Rome, after which it will be in vain to search for any record of progress during the many centuries of utter stagnation which succeeded this memorable event. During this dark period no portion of ancient history is so imperfect as that which relates to shipping. Indeed, to this very day the mantle of night has cast its shades over marine architecture, as though its facts were of no consequence upon the historic page. Ship-builders have scarce ever been *writing* men, and the fault is their own if they have left but a few marks in literature to designate the path of progress.

The waters of the Mediterranean Sea in Europe, which had, up to the downfall of Roman civilization, formed the chief field of the navigator, was now destined to witness the decline of maritime art, and for a long period cease to boast of the supremacy of their fleets.

The little of life that remained in stagnant Europe during the dark ages was found in the barbarous North. In the countries bordering on the northern seas of that continent, the spirit of maritime enterprise sprang up as being congenial to the habits of the Northmen during a period of uni-

versal aggression, confusion, and migration. The hardy and adventurous population of these wild and far-spreading districts poured down, horde after horde, in irresistible might, by land and sea, spreading desolation and dismay throughout Southern and Western Europe. Every sea was plowed by the fragile barks of these Scandinavian adventurers, and every shore was devastated by their incursions.

Denmark, Norway and Sweden sent their hardy sons to the coasts of the German Ocean, the British Channel, the Bay of Biscay, and even to the Mediterranean on the west, so that the maritime provinces of ancient civilization became their spoil. To the influence of these expeditions we may trace the foundation of that maritime genius and power which to this day distinguishes the people of Northern and Western Europe above all other people in the world, and which has descended to the shores of North America.

The Californian and Australian expeditions of our own day may serve to illustrate the development of the art of ship-building which was fostered by the bold and successful enterprises of the piratical excursions of those hardy tribes. They not only constructed vessels capable of undertaking voyages along the dangerous coasts of Europe, but visited Iceland, and at a later period even Greenland; and very good evidence exists that from thence they cruised down the coast of North America, and landed on the soil of New-England, many centuries prior to the discovery of the New World by Christopher Columbus in 1492.

In the early part of the tenth century, Floke, a Norwegian pirate, made a voyage from Shetland to Iceland. We quote an Icelandic historian for the following account of it:

"There was yet no use of the mariner's compasse, wherefore Floco, leaving Heitlandia, tooke certayne ravens unto him; and when hee thought hee had sayled a great way, he sent forth one raven, which, flying aloft, went backe againe to Heitlandia, which she saw behinde. Whereupon Floco, perceiving that he was yet neerer to Heitlandia than other countryes, and therefore coragiously going forward, he sent forth another raven, which, because she could see no land, neither before nor behinde, light unto the ship againe. But, lastly, the third raven was sent forth by Floco, and having for the most part performed his voyage, through the sharpnesse of her quick sight attained the land, she speedily flew thither, whose direction Floco following, beheld first the eastern side of the island."

The light, flat-bottomed vessels of the Saxon marauders were built of light timber frames, the sides and upper works consisting only of wicker, with a covering of strong hides, and were particularly well adapted to navigating the rivers of Europe.

The vessels of the Gaulish Veneti were built flat on the bottom, with very high, full-shaped ends, or bows and sterns, and were strongly constructed

of oak, having sails made of skins, and a sort of thin, pliant leather. No oars were used except for steering, and the largest of such vessels about the middle of the fifth century were capable of carrying 500 men.

But it is to the rise of Venice we must next look for the dawn of mercantile enterprise, which was destined to re-light the torch of civilization along the shores of the Mediterranean, and give a renewed impetus to ship-building. For many centuries after the tenth, Venice was the great school for the arts connected with navigation, and her ship-wrights and seamen were long the most instructed in Europe. While the northern seas continued to be navigated by the Scandinavian sea-kings in quest of plunder or a home, ships floated on the waters of the Mediterranean, which, it is said, were of the burden of 1,200 or 2,000 tons, and were in build either copies or modifications of the ancient galley. This kind of vessel being very illy adapted to the navigation of the northern sea-board of Europe, or any other than the tranquil waters of the Mediterranean, appears to have checked the spirit of commerce along the former coast, while it fostered it in the latter so long as it was continued in use.

But though the galley proved inadequate to the demands of commerce, it served a better purpose for war, and was therefore adopted by Alfred the Great, ruler of Britain, when he directed and superintended the construction of the first fleet of England to protect his people from the incursions of the Danes. The chief qualification of the galley for naval purposes consisted in affording space for a large number of fighting men, and being propelled by oars, was more under command in executing manœuvres than sail vessels, which it set aside, until the invention of cannon rendered other arrangements necessary. Thus the introduction of war-galleys from the south to the north coasts of Europe, checked the *fillibustering* Northmen by placing a curb upon their successes.

In the reign of Athelstan, the grandson of Alfred, it was decreed that "if a marchant so thrived that he passed thrise over the wide seas of his owne craft, that he was thenceforth a Thein's right worthie;" which establishes two facts: one is, that at so early a period of English history there were merchants of wealth enough to engage in such a traffic; and the other is, that from the richness of the reward held out to successful enterprise, we may estimate the difficulty of the task. These voyages were made in sail vessels.

In the beginning of the 12th century, the Norwegians and Danes had sail vessels differing from those of the other northern powers, whose ships partook of the character of the Mediterranean galley, being "infinitely shorter in proportion to their length than galleys," which, we will recollect, were no more nor less than huge-sized row-boats.

In the reign of Ethelred, king of Britain, a regular tax was instituted for providing and maintaining a navy. It was enacted that whosoever pos-

sessed "310 hides of land, was charged with the building of one ship or galley; and owners of more or less hides, or part of one hide, were rated proportionately." Yet this did not create a navy of sufficient strength to preserve Britain from the ravages of the Danes.

At length Britain was conquered by the Danish power, and under Canute, the first who united the crowns of Denmark, Norway and Britain in one person, the naval affairs of these three countries were advanced in every direction. Indeed, so long as the Danish monarchs ruled Britain, ship-building received the utmost attention from royalty. Hardicanute, the third Danish monarch, had 32 ships for the navy constructed in one year, and the taxes he levied for the support of his navy were so grievous, that scarcely any man was able to pay them. W. W. B.

Art. IX.—THE ARCTIC EXPEDITION.

ARRIVAL OF THE RELEASE AND ARCTIC.—COMMANDER HARTSTEIN WITH DR. KANE AND PARTY.

Thursday afternoon, Oct. 11th, the U. S. Arctic Expedition, the bark Release and steam brig Arctic, Commander H. J. Hartstein, U. S. Navy, which left New-York on the 30th of May last, terminated successfully in landing Dr. Kane and party at New-York.

Capt. Hartstein sailed from New-York May 30th, 1855, arrived in Lievely, Isle of Disco, Greenland, July 5th. Coasted along the shores of Greenland, from Holsteinburg to lat. 78 deg. 37 m. north, touching at Lievely, Hare Island, Upernavic, Hakluyt Island, Cape Hatherton, and other places on the coast; were 28 days boring through the pack in Melville Bay; thence crossed Davis' Straits, went up Lancaster Sound as far as Admiralty Inlet, where they were opposed by a solid pack, which entirely stopped their progress. Thence they proceeded down the western coast, examining Possession and Ponds' bays; were fast in the great middle pack for several days (to all appearances, for the winter). In latitude 69 deg. 39 m., longitude 63 deg. 30 m. west, spoke English whale ship Eclipse, of Peterhead, bound to Cumberland Inlet; had taken three fish; all well, and arrived at Lievely on their return from having entirely circumnavigated the north waters, as far as the ice would permit.

Sept. 13th.—They there found Dr. Kane and his associates (having abandoned his vessel in the ice,) excepting three who had died from exposure, viz.: Christian Alsen, carpenter; Pierre Shubert, and Jefferson Baker. Found at Lievely the Danish brig Marianne, Captain Ammondson, loading for Copenhagen. Sailed from Lievely Sept. 18. On the 19th, boarded the Danish brig Baldus, 37 days from Copenhagen, bound to Lievely. On the 27th, spoke English schooner Stella, from Sandwich Bay, bound to Plymouth. No traces whatever had been discovered of Sir John Franklin's party.

The last winter in the Arctic has been unusually severe, many of the natives having perished from exposure and starvation. Have been com-

pelled to eat their dogs, the extreme cold having prevented the usual hunting expeditions.

The vessels are in tolerably good condition. They have been in collision with icebergs, and severely nipped in the packs.

Bark Release, Hartstein, from Lievely, Isle of Disco, Greenland, Sept. 18.

List of Officers.—H. J. Hartstein, lieutenant, commanding the expedition; Wm. S. Lowell, acting master; John K. Kane, assistant surgeon; Joseph P. Tyffe, passed midshipman; Charles Lever, V. P. Hall, boatswains' mates; Richard M. Clark, surgeon's steward.

Crew.—Robert Bruce, Wm. Smith, boatswain's mates; David Batey, captain of fore-top; Charles Johnson, main-top; George Devys, Thos. Ford, gunner's mates; Wm. Phinney, Joseph Morris, quartermasters; Francis Taylor, captain of hold; Benjamin Moore, sailmaker's mate; Charles Williams, carpenter's do.; Thomas Franklin, officer's steward; Wm. Henry, ship's cook; Louis Lawrence, Andrew Larsen, Byron Polter, John Haley, John Smith, George Bidwold, seamen.

Propeller Arctic, Charles S. Simms, from Lievely, Isle of Disco, Greenland, Sept. 18th.

Officers.—Charles C. Simms, lieut. commanding; Watson Smith, acting master; James Laws, assistant surgeon; Harman Newell, first assistant engineer; William Johnson, acting third do.; Samuel Whiting, acting boatswain; William Richardson, acting carpenter; John Van Dyck, purser's steward; Abm. W. Kendall, surgeon's do.

Crew.—William Carey, John Blinn, boatswain's mates; William Grover, Walter Wilkinson, quarter-masters; Richard Hartley, captain of hold; Joseph Brown, ship's cook; John Fox, John Gilbert, Geo. Tyler, second class firemen; John Thompson, John Brown, George Price, James Botsford, seamen.

DR. KANE'S PARTY.

In the Release.—Dr. Kane, U. S. N.; John W. Wilson, Amos Bonsall, Dr. J. J. Hayes, Augustus Sontag, Henry Goodfellow, George Stephenson, William Morton, Thomas Hickey.

In the Arctic.—Henry Brooks, boatswain, U. S. N.; James McGarry, George Riley, William Godfrey, Charles Blake, George Whittle.

The Advance sailed from New-York for the Arctic seas on the 31st of May, 1853, under command of Dr. Kane, Passed Assistant Surgeon U. S. Navy, who had been detailed for this special service of the United States Government; was furnished with provisions for three years, but it was not intended that the expedition should be absent more than from eighteen months to two years, unless insurmountable obstacles should prevent a return within that time. Next to the search for Sir John Franklin the object of the expedition was to be scientific discovery, and scientific apparatus and means to aid in this purpose were liberally provided."

The Official Report of Dr. Kane.

The following is a copy of the official report of Dr. Kane, commanding second Grinnell expedition in search of Sir John Franklin, to the Secretary of the Navy:

Our little party have returned in health and safety.

We reached the Danish settlements of Upernavic on the 6th of August, after an exposing travel of thirteen hundred miles. During this journey, which embraced alternate zones of ice and water, we transported our boats by sledges, and sustained ourselves on animal food exclusively by our guns. We entered port after eighty-four days exposure in the open air.

I have the honor to subjoin a hurried outline of our operations and results in advance of more detailed communications.

My previous dispatches make the department acquainted with our arrival at the northern settlements of Greenland. Thence I crossed Melville bay without accident, and reached Smith's Sound on the 5th of August, 1853. Finding Cape Hatherton, the seat of my intended beacon, shut out from the sound by the more prominent headland of Littleton Island, I selected this latter spot for my *cairn*, erecting a flag-staff, and depositing dispatches.

To the north the ice presented a drifting pack of the heaviest description, the actions of hummocking having in some instances raised barricades of sixty feet in height. In my efforts to penetrate this drift, being driven back and nearly beset in the pack, I determined (as the only means of continuing the search) to attempt a passage along the land where the rapid tides (here of twelve to sixteen feet rise and fall) had worn a precarious opening. Previous to this responsible step, a depot of provisions with a metallic life boat (Francis') was carefully concealed in a large inlet, in latitude 78 deg. 20 min.

The extreme strength of the Advance enabled her to sustain this trying navigation. Although aground at the fall of the tides, and twice upon her beam-ends from the pressure of external ice, she escaped any serious disaster. After a month of incessant labor, cheered, however, by a small daily progress, the new ice so closed around us as to make a farther penetration impossible. With difficulty we found a winter asylum at the bottom of a bay which opened from the coast in latitude 78 deg. 44 min. Into it we thankfully hauled our battered little brig on the tenth of September, 1853. From this point as a centre, issued the explorations of my party.

The winter was of heretofore unrecorded severity. Whiskey froze as early as November, and mercury remained solid for nearly four months. The range of eleven spirit thermometers, selected as standards, gave temperatures (not yet reduced) of sixty to seventy-five degrees below zero, and the mean annual temperature was 5 deg. 2 min. Fahrenheit, the lowest ever registered.

This extreme cold, combined with one hundred and twenty days of absence of sun, gave rise to an obscure but fatal form of tetanus, (lockjaw). The exertions of Dr. Hayes, the surgeon of the expedition, had readily subdued the scurvy, but these fearful tendencies to tonic spasm defied our united efforts. This disorder extended to our dogs, fifty-seven of which perished, thus completely breaking up my sledge organization.

The operations of search were carried on under circumstances of peculiar hardship. We worked at our sledges as late as the 24th of November, and renewed our labor in March. Much of this travel was in darkness, and some at temperatures as low as 50 deg. The earlier winter travel was undertaken by myself in person, but by the aid of a single team of dogs, and the zealous co-operation of my officers, we were enabled to replace the parties as they became exhausted, and thus continue the search until the 12th of July. It is believed that no previous parties had been so long in the

field. Messrs. Brooks, McGeary, Bonsall, Hayes, and Morton, successively contributed to the general result. The men worked with fidelity and endurance.

I briefly detail the explorations of our party.

Smith's Sound has been followed and surveyed throughout its entire extent. It terminates to the north-east, in a gulf 110 miles in its long diameter.

Greenland has been traced to its northern face, the coast tending nearly due east and west, (E. 17 deg. N.) Its further penetration towards the Atlantic was arrested by a glacier, which offers an impassable barrier to future exploration. This stupendous mass of ice issues in 60 degrees west longitude. It is coincident with the axis of the peninsula, and is probably the only obstacle to the insularity of Greenland. It rises 300 feet in perpendicular face, and has been followed along its base for 80 miles in one unbroken escarpment. This glacier runs nearly due north, and cements together by an icy union the continental masses of Greenland and America.

It explains the broken and permanently frozen character of Upper Smith's Sound, its abundant icebergs, and to a certain extent, its rigorous climate. As a spectacle, it is one of the highest sublimity.

The northern land, into which this glacier merges, has been named Washington, and the bay which interposes between it and Greenland I have named after Mr. Peabody.

Peabody Bay gives exit at its western curve (latitude 80 deg. 12 min.) to a large channel, which forms the most interesting geographical feature of our travel. This channel expands to the northward into an open and iceless area, abounding in animal life, and presenting every character of an open Polar sea. A surface of 300 square miles was seen at various elevations free from ice, with a northern horizon equally free. A north wind, fifty-two hours in duration, failed to bring any drift into this area.

It is with pain that I mention to the department my inability to navigate these waters. One hundred and twenty-five miles of solid ice, so rough as to be impassable to boats, separated them from the nearest southern land. My personal efforts in April and May failed to convey one of the smallest India rubber boats to within 90 miles of the channel.

My party, including myself, were completely broken. Four of them had undergone amputation of toes from frost bites; nearly all were suffering from scurvy, and the season had so far advanced as to render another journey impossible. To the north of latitude 81 deg. 17 min. the shores of the channel became precipitous, and destitute even of passage to the sledge. William Morton, who with one Esquimaux and a small team of dogs had reached this spot, pushed forward on foot until a mural cape, lashed by a heavy surf, absolutely checked his progress.

It was on the western coasts of this sea that I had hoped to find traces of the gallant martyrs whose search instigated this expedition. The splendid efforts of Dr. Ray—now first known to me—would have given such a travel a merely geographical value. Reviewing conscientiously the condition of my party, it is perhaps providential that we failed in the embarcation.

The land washed by this sea to the northward and westward has been chartered as high as 82 deg. 30 min., and longitude 76 deg. This forms the nearest land to the pole yet discovered. It bears the honored name of Mr. Grinnell.

As the season advanced, it became evident that our brig would not be liberated. Our immediate harbor gave few signs of breaking up, and one unbroken ice surface extended to the sound. It was now too late to attempt an escape by boats; our fuel was deficient, and our provisions, though abundant, were in no wise calculated to resist scurvy. At this juncture I started with five volunteers on an attempt to reach the mouth of Lancaster Sound, where I hoped to meet the English expeditions, and afford relief to my associates. During this journey we crossed the northernmost track of William Baffin in ——, but finding a solid pack extending from Jones' Sound to Hakluyt Island, with difficulty regained the brig.

The second winter was one of extreme trial. We were obliged, as a measure of policy, to live the lives of the Esquimaux, enveloped in walls of moss, burning lamps, and eating the raw meats of the walrus and bear. At one time every member of our party, with the exception of Mr. Bonsall and myself, was prostrate with scurvy, and unable to leave his bunk. Nothing saved us but a rigorously organized hunt, and the aid of dogs, in procuring walrus from the Esquimaux, the nearest settlement of which people was seventy miles distant from our harbor.

With these Esquimaux—a race of the highest interest—we formed a mutual alliance, sharing our resources, and mutually depending upon each other. They were never thoroughly to be trusted, but, by a mixed course of intimidation and kindness, became of essential service.

I have to report the loss of three of my comrades—brave men who perished in the direct discharge of their duty. Two of these—acting carpenter Christian Ohlsen, and Jefferson Baker, died of lockjaw; the third, Peter Shubert, of abscess following amputation of the foot. Mr. Ohlsen was a valuable adviser and personal friend. He acted in command of the brig during my absence upon the sledge journeys.

Knowing that a third winter would be fatal, and that we were too much invested by ice for an expedition from the Sound to liberate us in time, for the present season, I abandoned the Advance on the 17th of May, and commenced a travel to the south. The sick—four in number—were conveyed by our dog sledge. I had to sacrifice my collection of natural history, but saved the documents of the expedition. The organization of this journey was carefully matured to meet the alternating contingencies of ice and water. It consisted of boats cradled upon wooden runners, with lesser sledges for the occasional relief of cargo. With the exception of reduced allowances of powdered breadstuff and tallow, we depended upon our guns for food; but a small reserve of Borden's meat biscuit was kept unused for emergencies. Our clothing was rigorously limited to our furs. We walked in carpet moccasins.

Our greatest difficulty was the passage of an extensive zone of ice which intervened between the brig and the nearest southern water. Although this belt was but eighty-one miles in linear extent, such was the heavy nature of the ice, and our difficulties of transportation, that its transit cost us thirty-one days of labor, and an actual travel of three hundred and sixteen miles.

From Cape Alexander we advanced by boats, with only occasional ice-passages at the base of glaciers. At Cape York I erected a cairn and pennant, with dispatches for the information of vessels crossing Melville bay; and then, after cutting up my spare boat for fuel, embarked for the North Greenland settlements.

We arrived at Upernavic (as before stated) on the 6th of August, without disaster, and in excellent health and spirits. Throughout this long journey my companions behaved with admirable fortitude. I should do them an injustice if I omitted to acknowledge their fidelity to myself, and gallant bearing in times of privation and danger.

From Upernavic I took passage for England, in the Danish brig Marianne; but most fortunately, touching at Godhaven, (Disco) we were met by our gallant countrymen, under Capt. Hartstein. They had found the ice at Smith's Sound still unbroken, but having met the Esquimaux near Cape Alexander, had heard of our departure, and retraced their steps. They arrived at Disco but twenty-four hours before our intended departure for England. Under these circumstances, I considered it obligatory upon me to withdraw my contract for passage in the Marianne, and return with the Release and Arctic.

The present season is regarded as nearly equal in severity to its predecessors. The ice to the north is fearfully extended, and the escape of the searching squadron from besetment is most providential. The rapid advance of winter had already closed around them the young ice, and but for the power of the steamer and the extraordinary exertions of Capt. Hartstein, an imprisonment would have been inevitable. Not only Smith, but Jones' and Lancaster Sounds were closed with an impenetrable pack; but, in spite of these difficulties, they achieved the entire circumnavigation of Baffin's Bay, and reached the Danish settlements by forcing the middle ice.

Art. X.—A DESPERATE ATTEMPT TO FRIGHTEN A BRITISH ADMIRAL.

When, during the last war of our country with Great Britain, an English fleet was cruising up and down Long Island Sound, and making prizes of the small craft of the fishermen and traders along shore, one of the British gun-boats fell in with the smack Nancy, of and from Saybrook, bound to New-Haven, with a lot of onions and other garden products.

It was quite a windfall for the men-o'-war's-men; and the little cargo was served out to the ship's messes as "something fresh," which was not to be had every day.

The smack having been a fair prize, was dropped astern of the frigate, and the three persons who had been taken on board of her, though prisoners of war, were set on shore at Guilford.

On the day following, a little rough looking Yankee was seen by the officer of the British flag-ship's deck rowing alongside in a fisherman's skiff, who asked the privilege of stepping on board, and on leave being granted, he climbed up the side by a single rope, which had been thrown him by one of the boatswain's mates.

Instead of pulling off his old felt hat as he stepped upon the quarter-deck, and bowing respectfully, he raised his right hand above his head, and bringing it down forcibly on the top of his hat, crushed it even over his

eyes, and throwing himself into the most independent attitude imaginable, desired to see "the skipper of this big craft."

The officer of the deck, after taking a good look at his visitor, and hesitating whether to humor the matter as a good joke and report the visitor to the Admiral, or, to seize him up, give him a dozen, and put him in his skiff again, resolved to see how much sport would grow out of it, and reported to the Admiral that "a man from the shore desired to speak with him." The old chief looked out of the lattice of his cabin, and discovering a rare specimen of humanity standing there with his hat slouched down over his ears, and his arms a-kimbo, as though he cared less for George the Third than for his next door neighbor, came out and bade him good morning.

"Be you the skipper of this craft?" was the blunt response of the Yankee.

"This fleet is under my command," said the Admiral.

"Wall: you've got the Nancy astarn—she's my smack—and I've come to get her, and take her tu hum."

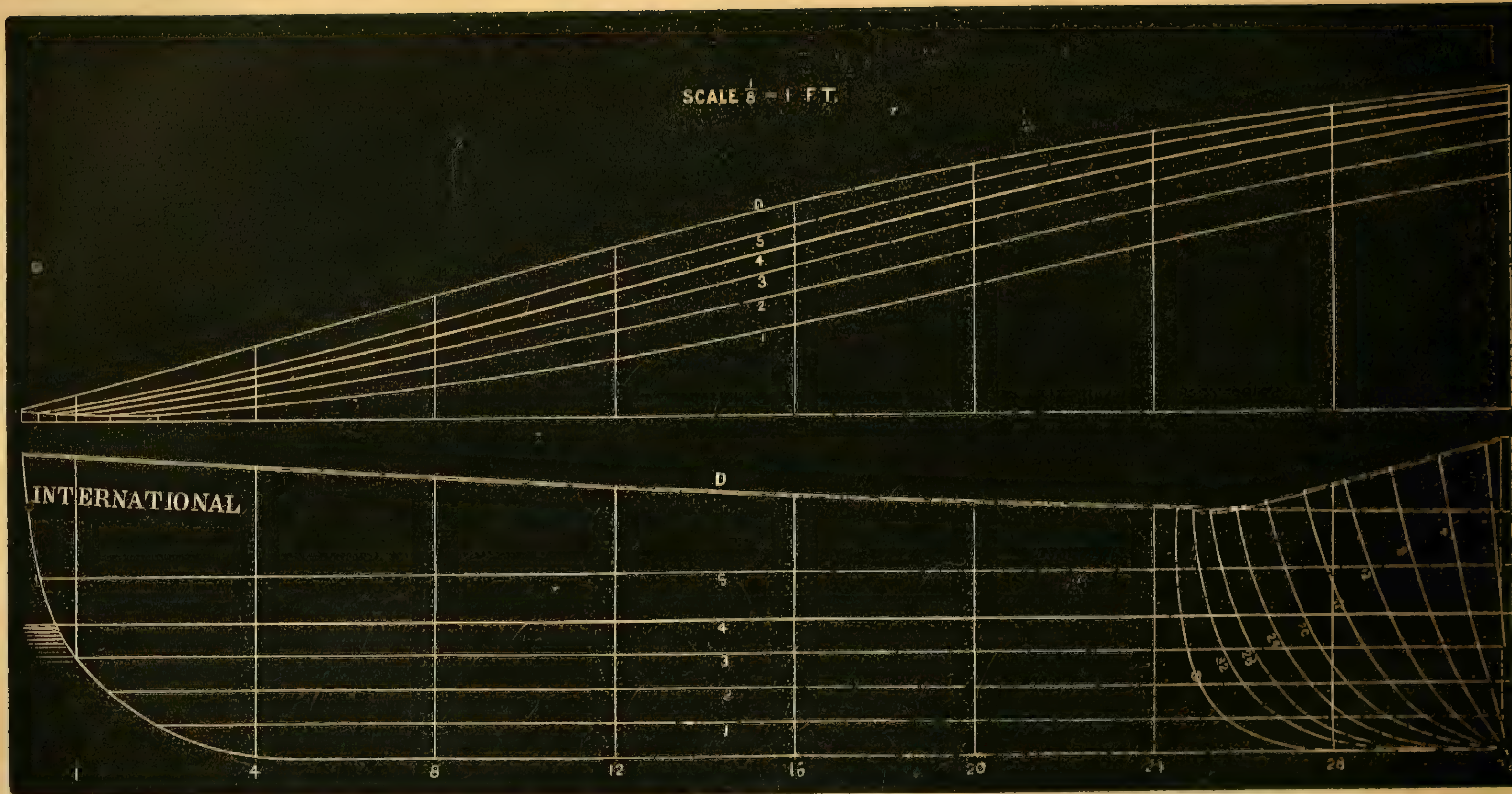
"She is a fair prize, sir; and we had supposed that she belongs to His Majesty the King."

"Blast and d— His Majesty the King—she's mine; and if you don't give her up to me you'll see trouble, I guess."

The Admiral was delighted with the consummate impudence of his visitor, and remarked, aside, to his First Lieutenant, that such language was probably never before used concerning His Majesty upon that quarter-deck; and disposed to indulge the joke, he assured the Yankee that he would entertain the proposition, and if he would bring off a load of vegetables for the ship's use next day, they should be well paid for, and an answer should be given.

"If you think I am a-going to fetch off provisions to the enemies of my country, you're much mistaken—but I'll come off and see whether you're a-going to give up the Nancy without a fuss. And I'll tell you what it is, skipper, *if you don't give me up that smack to-morrow, I'll see ye before Squire Daggett before the sun sets!*"

PROPELLER INTERNATIONAL.—We publish the lines of this vessel, because she belongs to that class of which so much remains to be learned, and notwithstanding she has been burned, she has proved herself worthy a place in the Magazine. She was built by Messrs. Bidwell, Banta & Co., and has a stern propeller, with shaft above water, and reflects no discredit on her proprietors, as those acquainted with her performance on the lake are ready to admit. The performance of this kind of vessel has become a fixed fact in the history of screw propulsion, which no one, we think, will long doubt, after taking a trip on those screw vessels on Lake Erie which have their shaft above water.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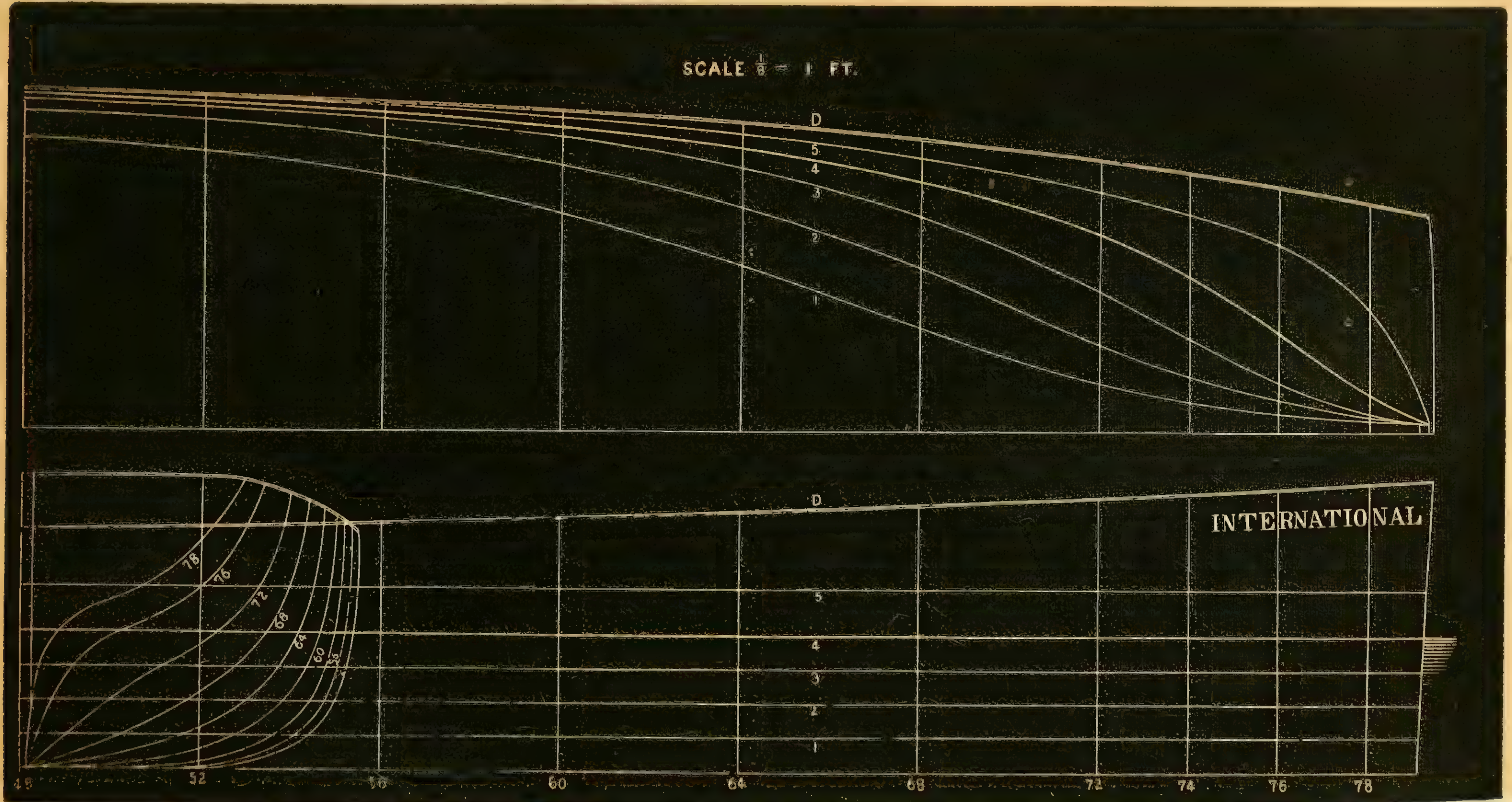
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Art. XI.—REPORT OF SPECIAL COMMITTEE OF THE METROPOLITAN MECHANICS' INSTITUTE,

AT ITS LATE EXHIBITION, ON SPECIMENS OF WOOD, ETC.

These specimens of wood, &c., were deposited by Mr. Jarvis, of Portsmouth, Virginia, and prepared by him for the purpose of illustrating the growth of the Teredo, and a new method of preventing its ravages.

These specimens show, very beautifully, the manner in which the destructive ship-worm, or Teredo, prosecutes its insidious attacks upon timber submerged in salt water—in attaching itself to the outside as an exceedingly minute embryo, and first burying itself in a hole so small as to escape the naked eye, then enlarging its quarters, and passing along a gallery excavated in its progress by means of the auger-like motion of its powerful jaws, and lives within a calcareous shell by a secretion from its own body. These specimens show that the borer never inadvertently cuts through the outside, even though the thickness of a piece of paper only may be left; and that the gallery of one animal is rarely invaded by another. Blocks of wood, perfectly sound to all outward appearance, when split open, are found to be completely honey-combed, and are liable to be crushed or perforated by a very slight blow.

Owing to the prevalence of the Teredo in most parts of the world, and its great destructiveness and rapidity of action, various attempts have been made from time to time to counteract its ravages. None, however, have proved effectual, save the application of copper sheathing to the bottom. This is, however, an expensive process, and only to be adopted in first class vessels.

Mr. Jarvis, in virtue of his office as inspector of timber in the United States Navy Yard, at Portsmouth, has, for many years, been engaged in experimenting upon the various methods for neutralizing the action of the Teredo, as suggested by others, or occuring to himself. The different mineral solutions, as corrosive sublimate, sulphates, and nitrates of iron, zinc, and copper, &c., were all tried, but found scarcely even to palliate the attacks of the Teredo, much less to meet them fully. Taking out one set of substances after another, he at last began to institute a series of experiments on the different paints, and very soon, in the New-Jersey white zinc paint, discovered the great desideratum. The specimens exhibited by Mr. Jarvis clearly show that the application of this paint to a surface, coating it so completely that no minute pores are left unfilled, will certainly keep off the Teredo, and that this is the only substance, as far as known to the committee, that does give this result, with the exception of the metallic sheathings.

The specimens and experiments of Mr. Jarvis still further show that not only is the white zinc paint entirely efficacious against the Teredo, but that it prevents the attachment of any marine organism whatever to a surface coated with it. Even after the ravages of the Teredo are guarded against by copper sheathing, the bottom of a vessel speedily becomes coated with barnacles, oysters, corrallonis, sea-weed, &c., so as to impede most seriously her progress. The specimens exhibited prove that nothing of the kind occurs with the white zinc paint. Purmatic blocks of wood and plates of metal coated on different sides with different paints, and submerged for a

sufficient length of time, exhibit the white zinc surface perfectly clear and sound, while on all the others are to be found barnacles, &c., in abundance. From the number and variety of the specimens and illustrations, there can be no doubt as to this fact.

It is thus sufficiently evident that by painting a ship's bottom with white zinc paint, whether coppered or not, the Teredo is kept out, and all growths of animal or vegetable character prevented.

In view, therefore, not only of the great variety and completeness of the specimens deposited by Mr. Jarvis, but of the fact that he has in them completely illustrated a discovery of the very first economical importance, and made by him, as far as known to the committee, they recommend the award of a silver medal.

S. F. Baird,
G. C. Schaeffer.
E. Foreman.

Art. XII.—ADDRESS OF PROFESSOR HENRY.

We have deemed the following address from Professor Henry, President of the Metropolitan Mechanics' Institute, worthy of a place in the Magazine, and only omit the list of awards for want of *space*, under our new arrangement, which furnishes us with a profusion of good matter. This address was delivered at the closing of its second exhibition, on the evening of March 14th, 1855.

"The Second Exhibition of the Metropolitan Mechanics' Institute is now about to close; and it becomes my official duty to state some facts in regard to the Association, and to speak a few parting words to the exhibitors.

"The Association was founded in August, 1852, and has fully realized the reasonable anticipations of its friends. It has not, it is true, been able, as yet, to erect a building for its own accommodation, or to give evidence of material prosperity in the collection of tangible objects of study or illustration. It has, however, done more than this. It has produced mental and moral results, which, though unseen by the casual observer, are such as to favorably affect this city, as well as the country at large, through all coming time. The acts which we perform and the influences which we exert, whether for good or evil, do not cease with the exertions which may have called them forth; they continue to produce effects and to modify and mould future events, it may be, long after the persons with whom they originated have been individually forgotten.

"The Association has called together and united in bonds of friendship, for mutual co-operation, men of different characters, professions, and occupations, many of whom were previously strangers to each other. It has tended to diminish the selfish feeling of individuality, consequent upon the inordinate desire for the acquisition of wealth, which the institutions and condition of our country are too apt unduly to foster. It has tended to liberalize all who have been connected with its affairs, and to induce a generous public

spirit in this city, which, though blessed with peculiar advantages, has not been as conspicuous for a community of public feeling and of *action* as could have been desired.

"Man is a social being, and his intellectual development, as well as the exhibition of his greatest physical and moral power, are the result of combined efforts, whether these are displayed in the State, in the community, or in the voluntary association.

"The objects of the Institute are two-fold; first, the improvement of artists and artizans; and second, the improvement of arts and inventions.

"In reference to both these objects we claim for the association that it has done important service. A school of design has been established and mainly supported by the Institute, which, during four months of last year, averaged an attendance of *ninety* pupils. The instruction to these was not confined to the mere practice of imitation, or the copying of drawings presented to them; but their inventive faculties were exercised, and the art taught of forming new combinations. Few persons, not acquainted with the subject, can appreciate the advantage to the artizan of a knowledge of the art of drawing. He is, as it were, enabled by its means to experiment on paper, and to reduce to a tangible form the abstract conceptions of his genius, to arrange in due proportions the several working parts of a machine, to measure the size and calculate the strength of all portions of a complex structure, and in this way to avoid in actual construction the loss of time, labor, and materials which would otherwise ensue.

"But it is not alone its immediate practical value which should be considered in the art of design, but also the effect it has upon the moral feelings. The true and the good are so intimately connected with the beautiful, that one cannot be cultivated without advancing the others. In our own country, especially, attention should be paid to the improvement of the taste of the artizan, and to his education in the appreciation and the production of forms which will give that pleasure which is only enjoyed by a refined and cultivated mind. A few years ago, I spent a day in a New-England clock manufactory. I examined with the deepest interest every step of the different processes employed, and, as I was conducted from room to room, derived great gratification from the view of ingenious inventions for producing, with unerring precision and astonishing rapidity, all parts of the complex machine, which modern civilization has rendered so essential for marking the various allotments of time.

"There was one part, however, of the establishment, which fell far short of my own ideal standard. It was that improperly denominated the department of decoration. In this a number of females were employed in painting upon the cases, with gaudy colors, forms which might have been worshipped without danger of sin against the decalogue. The practical and the immediately useful were fully realized in this establishment; but the beautiful was worse than wanting, for its place was supplied and the natural desire for it satisfied with objects fitted to debase rather than to elevate. Several hundred clocks were daily sent forth from this manufactory, "to give a finger and a tongue to time, and measure out its lapse to transitory mortals;" and the thought involuntarily arose, how much might the beneficial influence of these instruments be increased, were they made to administer to the improvement of the taste, and consequently to the development of the higher moral feelings, as well as to induce habits of punctuality.

"The Institute has made a good beginning in the improvement of art, and its efforts in this line will be continued. A part of the proceeds of the present Exhibition will be devoted to the support of the School of Design. I trust also that the advantages of this part of the plan will be extended to *females;* for every means which tends to enlarge and multiply the application of their peculiar talents ought to be encouraged.

"Important effects may be produced by the Institute in the improvement of the artizan. Inducements may be held out by lectures, conversational meetings, and by special exhibitions of new inventions, to induce the members to make a place of habitual resort of the rooms of the Association.

"Much good has also been done by means of the Exhibitions. The first one numbered about 1,600 contributors, and on the list of the second, or that which is now about to close, there are about two thousand. The Institute has drawn to this city, for exhibition, products of labor and skill from every part of our widely extended domain. The inhabitants of Maine and New-Orleans, of California and the Atlantic seaboard, have brought hither their tributes to swell the triumph of industry and art. Nor are the contributions confined to our own land. Samples from China and Japan, Australia, Central and South America, many parts of Europe, and even from the interior of Africa, are here exhibited for illustration and imitation. Not only space but time is represented. Bricks of the present day are contrasted with those moulded during the reign of the Pharaohs, and some of the impressions of our teeming cylinder press placed in juxtaposition with the earliest specimens of the art of printing.

"Man is an imitative as well as a social being. It is a difficult process to produce anything absolutely new, and to only a favored few is vouchsafed the godlike faculty of creation. But, by means of exhibitions of this kind the scattered fruits of genius are collected, and offered as samples of imitation and improvement to the multitude, who, though they may not be able to originate, can modify, copy, and apply.

"Another advantage of an exhibition of this character, is that it serves as a stimulus to labor; the completion of many articles has been accelerated which might otherwise have been long delayed—other articles, again, have been commenced and executed with direct reference to a place in the collection. Moreover, it serves to give a desirable reputation to the real inventor, and to make his labors favorably and profitably known throughout the country; and, for this last purpose, no place in the United States is better fitted than the city of Washington. Here is common ground between the North and South, and here are assembled the representatives of every part of the Union to receive and diffuse a knowledge of improvements which might otherwise be confined to secluded districts. The Exhibition also furnishes a ready mart for the commerce of inventions, where the patent agent may receive employment, and the inventor make favorable disposition of the products of his ingenuity.

"There is another advantage, which, though not immediately of the same importance as those we have mentioned, is yet by no means to be lost sight of—I allude to the *material aid* which exhibitions, when properly managed, afford as a means of establishing and supporting schools and lectures, and in carrying out the various purposes of an association of the kind to which we belong. Exhibitions are therefore an essential part of the plan of organization of the Metropolitan Mechanics' Institute, and I may state that it is

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the design of its officers to hold them as often as means and circumstances will allow. We trust another exhibition will be held, if not the next year, at furthest the year after.

"I am happy to state, in behalf of the Regents of the Smithsonian Institution, that it has been a gratification to them to be able, by granting the use of its halls, to further so important an object; and in this, as in many other ways, to carry out the intention of its benevolent founder—*to increase and diffuse knowledge among men.*

"To the contributors of the Exhibition, in the name of the Association, I beg leave to return sincere thanks for the confidence they have placed in us, and the favor they have shown us, as well by the deposit of models and specimens, as, in many cases, by their presence and personal explanations.

"We regret that premiums cannot be given to all, and that, from the nature of the case, discrimination must be exercised, and comparison sometimes made. We commend, however, the spirit which induced the offer of any sample of industry, however humble. Though many of the specimens may appear commonplace and worthy of no special attention, yet, they are not so esteemed by the depositors, but are considered by them of importance; and hence it is impossible to meet the expectations of all, and not give dissatisfaction to some. I can assure the contributors, however, that the committees have endeavored faithfully, industriously, and conscientiously, to discharge their duty; and if in any case they have erred, as it is not improbable they may have done, I hope it will be viewed in its true light, as the result of accident, and not of design.

"To those who have favored us with their presence from a distance, we beg to express the hope that their visit has not been unprofitable to themselves, and that they have experienced as much hospitality and kind attention as a city so much frequented by strangers is able to afford.

"I regret to allude to the fact that the pleasure of the Exhibition has not been wholly unalloyed. The angel of death has passed over the assembly, and his dark shadow has fallen upon one of your number. A portion of our hall is shrouded in mourning. A worthy and enterprising contributor has been taken from our midst; a wife and children have been deprived of their solace and protector. Yet, this calamity, so sad and irreparable to the family of the deceased, has not been without its beneficial effects upon the community. It has awakened the heart-felt sympathies of the inhabitants of this city, it has exercised the active benevolence of the Young Men's Christian Association, and called forth the generous contributions of this Association.

"In conclusion, I beg to tender the best wishes of the Institute to the contributors from a distance, with the fervent hope that they may have a safe journey home and a happy reunion with families and friends; that success may crown their future labors to improve the facilities of life, and that we may again have an opportunity to bid them welcome to another and more extended exhibition. To the contributors in this city I would express the hope that they will not relinquish, with the close of the exhibition, their efforts to advance the arts among themselves; and, though the number of first premiums they may obtain in competition with the whole country may be small, I trust it will be in due proportion.

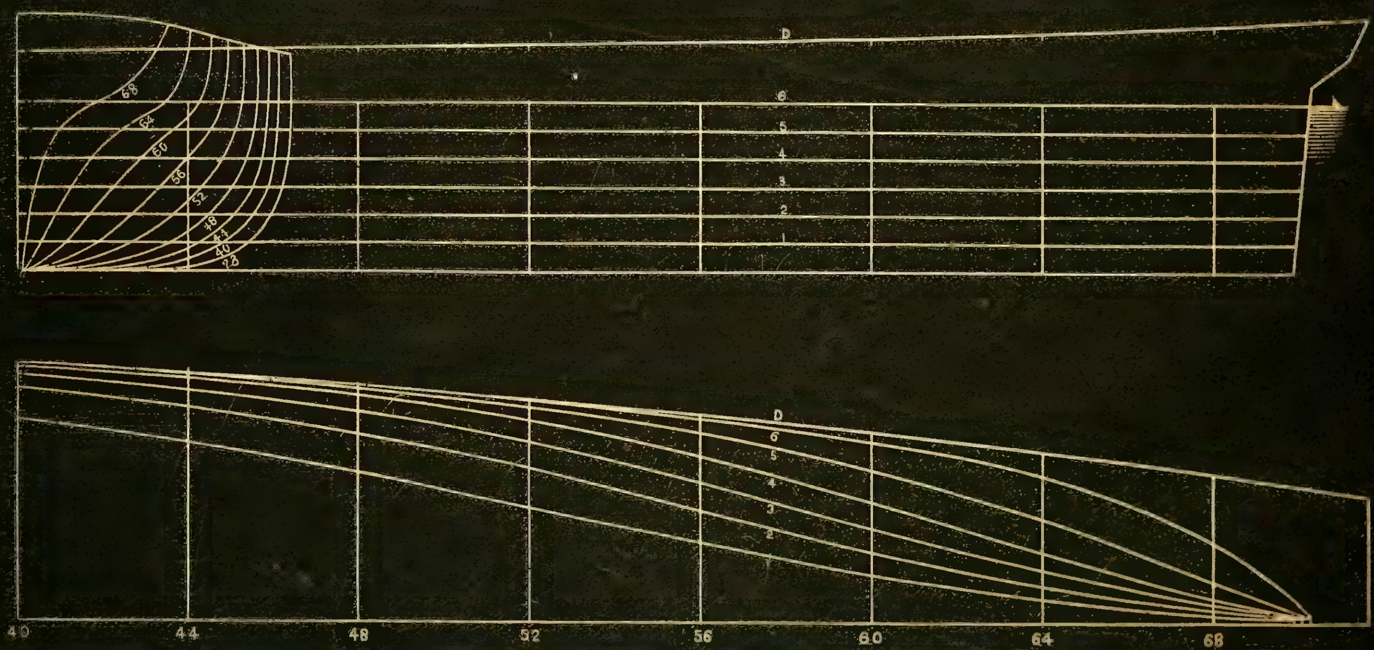
"To the citizens of Washington I would commend the Institute as an association worthy of their patronage and encouragement; and to those like

Mr. Corcoran, who have extended to it their liberal support, I would express the hope that their anticipations have not been disappointed nor their donations misapplied. To the members of the Institute I would assure the certainty of reward, if they persevere in their efforts to advance the cause in which they are engaged. Voluntary labor, properly directed, is always crowned with success, and always productive of good to the laborer as well as to those who partake of the products of his industry.

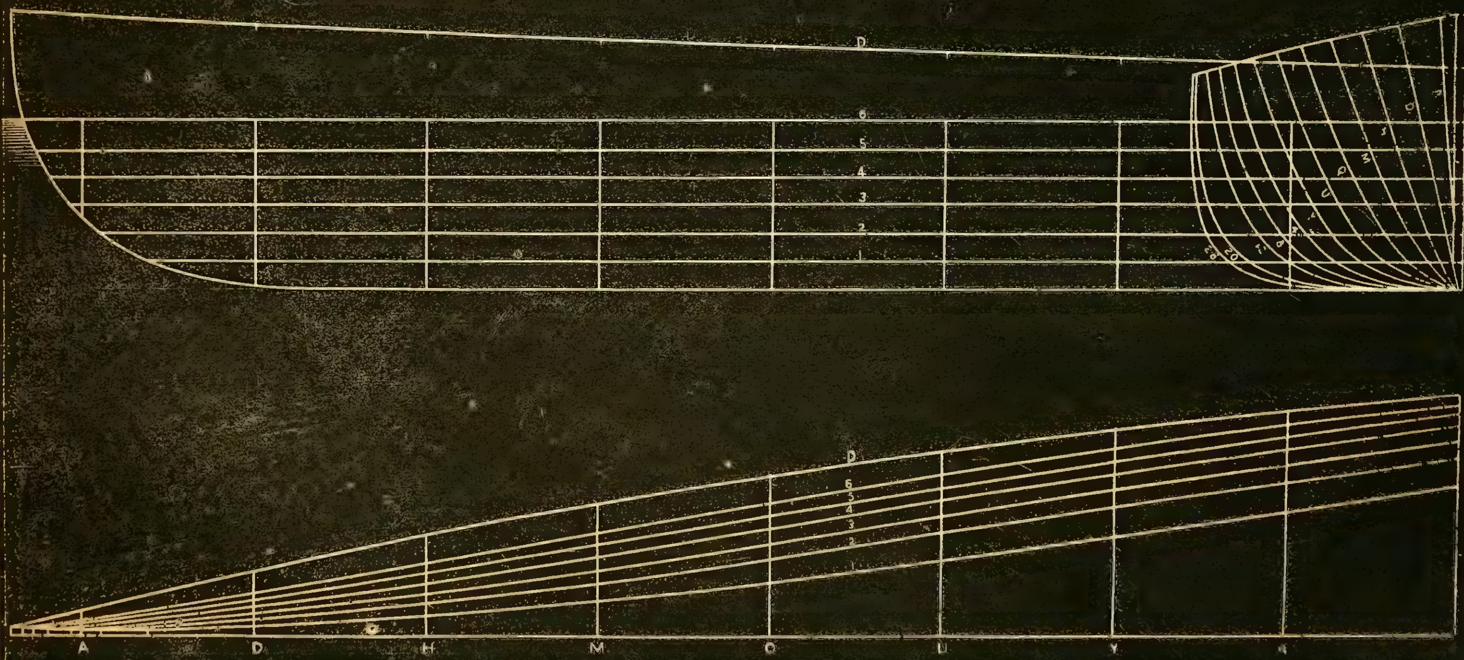
Art. XIII.—THE FAIR OF THE AMERICAN INSTITUTE.

The American Institute is now holding its 27th annual fair at the Crystal Palace, in this city, which is, decidedly, the best exhibition the Institute has ever had, and in many respects goes far beyond the World's Exhibition of 1853, held in the same building; the reasons for which are obvious to every American mechanical mind who has visited both exhibitions. The mechanics and engineers of the United States had little to expect from what was very improperly termed the World's Exhibition, gotten up, as it was, as a Wall-street speculation, entirely wanting in every aspect of that paternal spirit of genius and mechanism, upon which important point the American mind is so sensitive. It could not prove otherwise than a failure, as an American Exhibition, and scarcely less so as a European. The American Institute, having among its members at least a sprinkling of mechanics and engineers, has, as a consequence, the elements of endurance within itself, and being fully posted up on the deleterious effect of arbitrary rules and artificial distinctions upon exhibitions, they have sought to meet the exigency, and, as a consequence, have met the wants of the community in their exhibition. We regret to find that there is a growing disposition in the community of visitors to admit children at reduced price, and some have persisted on their going in free. We regret this, inasmuch as the admittance of children prevents contributors from enlarging their contributions of the development of genius. There are many exhibitors who cannot afford to pay a person to guard their articles against the mischievous depredations of children, and are entirely prevented from participating in its benefits. Apprentices can only come at night, and too often find that the mischievous fingers of some spoiled child have made sad havoc with their labor of weeks, and, perhaps, months. The Institute would confer a blessing on this class o exhibitors, if they would exclude or restrain in some way this class of visitors, even though it be by doubling the price of admission. We would gladly go into an examination of the merits of the Nautical and Marine Architectural department, but, inasmuch as our remarks might influence the judges, who have not yet performed their duties, we must forbear at present.

STEAMBOAT
GARDEN CITY.



STEAMBOAT
GARDEN CITY.



For the U. S. Nautical Magazine and Naval Journal.

Art. XIV.—EXPLOSION OF A STEAM BOILER.

MESSRS. GRIFFITHS & BATES:—

I take the liberty of sending you the following account of the explosion of a steam boiler at one of our saw-mills at this place—Manitowoc, Wis.—for your *Magazine*. The boiler in question was an old one, and has been dangerous for a year past.

On the night of September 27th, the firing was entrusted to a simple-minded *green hand*, who allowed the water to become low, if, indeed, it was not almost entirely dry, when an explosion took place, blowing out the posterior end of the boiler, above the flues, and a small portion around the insertion of the stand-up pipe on the bottom. The boiler was cylindrical, 17 feet long, and 41 inches diameter. It was erected upon brick-work, under a shed at the back side of the mill. The force of the explosion was so great as to project the boiler entire from its berth through the end of the shed across the mill yard, at the height of four feet above the ground, as it leaped over a pile of slabs, across the street also, struck the sidewalk, and glancing in its course passed through a board fence and a pile of cordwood, and landed in a back yard, without doing other damage than staving in door and windows of a small house, which stood about eight feet aside from its path. The piece of the end which was blown out was found within eighteen feet of the boiler, showing that it was not detached from it till it landed in the yard.

The distance traversed by the boiler, as measured by a tape line, was 274 feet! The poor fireman, alias *engineer*, was severely scalded, and may not recover. So much for the first two hours of his experience "running engines." Still the day could not have been far off when this boiler would have exploded in competent hands.

The course of this strange projectile was in a line exactly in the direction and range of its centre. It went off as straight as a ball, and may afford a new hint to the inventors of ordnance. Perhaps we may hereafter hear of red hot *steam-rockets*, in principle of discharge similar to the above, as we think, *original* instance. Sebastopol has fallen, but Cronstadt remains, and may require a new use of steam in battering its walls.

MIRROR.

STEAMBOAT GARDEN CITY.—The lines of this fine boat has been in our possession for some time, but has given place to other vessels which have appeared in the Magazine. It may be only necessary to say, in relation to this vessel, that she has been regarded as a favorite on the Lakes, where she belongs. She also was built by Bidwell, Banta & Co., at Buffalo, and is a side-wheel boat of no ordinary qualification in the passenger and freight trade, in which she is engaged.

From the Boston Evening Transcript.

Art. XV.—MEDFORD SHIPS.

We have been furnished with an extract from the "History of Medford," now in press, from the pen of Rev. Charles Brooks. It relates to ship-building in Medford, and has a just tribute to Thacher Magoun, Esq., one of the most noted builders of this section of the country. The volume above referred to, will contain a register of vessels built at Medford, between the commencement of the present century and the year 1855. These vessels are enrolled so as to present the year of their construction, their description and name, the yard in which they were built, the name of their respective builders and first owners, the residence of the latter, and the tonnage of each vessel.

From this register, it appears that five hundred and thirteen vessels have been built in Medford between the years 1800 and 1855, with an aggregate of two hundred and thirty-two thousand and six tons; and at a cost, according to the estimate of forty-five dollars per ton, of *ten million, four hundred and forty-nine thousand, two hundred and seventy dollars.* The greatest number constructed in any one yard is one hundred and eighty-five; and, in any single year, thirty. That year was 1845.

Medford Ships and Ship-Builders.—From the advance sheets of Rev. Charles Brooks's "History of Medford."

Mystic River, having no fatal shoals or rocks within it, permits the passage of an empty ship of twenty-five hundred tons at the highest tides. If we can suppose a sea-serpent to have started from Charlestown for a visit to the country, and a small stream of tide-water to have followed him in his explorations, we can imagine him thus making out by his many and sudden windings the course of our river from Boston Bay to the Pond,—rendering it thus serpentine in order to present the best accommodations to the greatest number of ship-builders. Where can a little river be found that will afford convenient sites for ten large ship-yards within one mile's distance? When, in one of these yards, we have seen from one to three vessels on the stocks at the same time, and have listened to that well-known, busy hum that comes from the boring of augers, the cutting of saws, and the driving of bolts, we have felt that a more glorious exhibition of human industry could nowhere be witnessed. To the gentlemen who have been at the head of this great enterprise, Medford is deeply indebted. Since the first of them came, real estate has more than doubled in the town; and land which was sold for thirty and fifty dollars per acre, has since been sold from two to five hundred per acre. The names of Magoun, Turner, Lapham, Sprague, James, Fuller, Rogers, Stetson, Waterman, Ewell, Curtis, Foster, Taylor, and others, will be held in grateful remembrance for many generations.

Mr. Calvin Turner was esteemed as one of the most skillful and accurate draughtsmen, as well as one of the most faithful builders in New-England. His yard was opposite Cross-street. He came to Medford in 1804, and rapidly acquired reputation by his genius and fidelity.

Mr. George Bryant Lapham was among the earliest comers connected with ship-building here. By patient industry, sound judgment and unobtrusive merit, he won confidence and commanded respect. Of others we should be glad to speak, did our limits allow.

Of the pioneer in this eventful movement of ship-building, we may take the liberty of stating a few facts, as they belong to the history of the town.

Thacher Magoun, Esq., was born in Pembroke, Mass., June 17, 1775—that red-letter day in Freedom's calendar. He early chose the trade of a ship-carpenter, and served his time with Mr. Enos Briggs, at Salem, where he worked five years. He was fond of being in the "mould-room," and soon showed good reason for his predilection. From Salem he went to Mr. Barker's yard, in Charlestown (the present Navy-Yard,) where he worked and studied two years, and assisted in modelling. There he made the model of the first ship he built, which was the "Mount Ætna," of Medford. In 1802, he began to look about him for a place in which he might safely begin, on his own account, the business which was the darling choice of his life. An accident, so called in the world's language, led him, one pleasant day, on a stroll upon Winter Hill; and, standing on one of those mounds of earth thrown up by our patriot soldiers, probably on the day he was born, for a rampart, he took a calm survey of Mystic River as the tide gave its full outline. At this moment came into his mind the thought that here was a good place to build ships. But many things were to be ascertained about it. How deep is the water at high tide? Are there any rocks or shoals in the bed of the stream? Can timber be got in the neighborhood? and can land be bought at a fair price? These were the inquiries which rushed through his young soul, and he felt that they must be answered. As his eye was searching river and woods, he saw the two masts of a schooner, which was lying at one of the distil-house wharves in Medford. He immediately started for her. This was his first visit to Medford. He reached the schooner, and his eager question to the captain was, "How much water do you draw?" Answer, "Ten feet." "What's your tonnage?" Answer, "One hundred and twenty tons." "Do you go up and down the river often?" "Yes, I bring wood for this distillery." "Are there any large rocks or shoals in the bed of the river?" "No, it's all clear." "How deep is the water generally at high tide?" "I guess from fifteen to twenty feet." "Do you think an empty ship of three hundred tons could float down the river?" "Oh, yes." After this conversation, he silently concluded to make the trial. He found intelligent and affluent citizens in Medford who were ready to aid him; but he told them "he could not afford to be helped." A young man thus afraid of debts would be likely to succeed without foreign aid. Young Magoun thus illustrated the common remark, that, where fathers do everything for their sons, the sons do nothing for themselves; and where fathers can do nothing for their sons, the sons do everything for themselves; making the difference between the giant and the dwarf. Some advised his beginning to build above the bridge. He accordingly examined the bed of the river, and the depth of water at low tide, by fording and wading; and thus decided not to fix himself there. He then weighed the reasons for preferring other places, till he finally concluded in favor of the spot where he first settled, and where all his ships have been built. His convictions being firm, that the river could float any vessel he might build, that the neighborhood could furnish an ample supply of oak timber, and that the site he had chosen could be purchased at a moderate price, he made an offer, which was accepted. Thus 1802 saw laid the first keel of that fleet of ocean merchant ships whose sails have shaded every bay and sea on the navigable globe. Honor to him to whom honor is due. Mr. Magoun lives to see his favorite science and art carried to new triumphs; and, resting in the affluence that follows his labor, may he long enjoy that respect and gratitude which society loves to give to its real benefactors.

Art. XVI.—THE LATE RUSSIAN FLEET IN THE BLACK SEA.

Perhaps a few additional particulars with reference to the once powerful fleet in the Black sea may not be deemed undeserving of a corner in your paper. It consisted in 1843 of three three-deckers, nine vessels mounting each 84 guns, seven 74's—in all, 19 ships of the line—besides six frigates, 11 corvettes, brigs and schooners, six steamers; otherwise—

3	120-gun ships	guns 360
9	84-gun ships	" 756
7	74-gun ships	" 518
19	Total guns	1,634

They actually carried, however, in all 1,464 guns. The names of the three largest were the Twelve Apostles, the Three Saints, and the Warsaw. There is only one larger ship than these in the Russian fleet—the Russia, 130 guns, in the Baltic fleet. Haxthausen, my authority, divides the Russian fleet into the Baltic and the Black sea fleets, the former consisting of three, the latter of two divisions, each of which consists ordinarily of one three-decker, eight two-deckers (among the last two ships mounting each 84 guns), six frigates, one corvette, and four smaller vessels; according to which statement the Baltic fleet consists of 27 ships of the line, 18 frigates, and 15 smaller vessels. This does not include steamers, the greater number of which are of English build. The Finns and the Cossacks of the Sea of Azoff make the best sailors. Sailors are obtained in part by conscription, but those from Finland are all volunteers. After twenty years' service they obtain permission to leave the service, although many are induced to remain in the navy by the great increase of pay which they receive, and which, after a certain time, takes the form of an annuity. Each ship of the line ought to have a crew of 1,100 sailors and marines, a complement sufficient to equip either—

1. A three-decker and a corvette; a captain-in-chief commands the first, a lieutenant-captain the second;
2. Or a two-decker of 84 guns and two brigs, the first commanded by a captain-in-chief, the two others by two lieutenant-captains;
3. Or a two-decker and a frigate, the first commanded by a captain-in-chief, the second by a post-captain.

Owing to the ships being built according to various models, they are difficult to manœuvre, as in every fleet, whatever the state of the wind, there are some which sail much worse than others. The wood used in their construction (with the exception of the corvettes, which are commonly built of larch) is oak; but, owing partly to the inferior quality of that which grows in the north of Russia, partly to its being worked up when in a green state, the ships soon get unfit for service. The best oak lasts from 12 to 15 years in the Baltic, while 10 years is sufficient to destroy the inferior quality. My author dwells much on the advantages to be derived from vessels of small draught of water in the Baltic:—"*Jusqu' à présent,*" he says, "*les flotilles à rames ont toujours rendu plus de services à la Russie dans les basses eaux de la mer Baltique que de grands vaisseaux.*"—*London Times.*

Art. XVII.—REGATTA OF THE EMPIRE CITY REGATTA CLUB.

This was a people's regatta, and it was, therefore, no wonder that it was so numerously attended. We hope it is not the last, but that the success with which it was attended will make the Empire City Club one of our permanent institutions.

The aggregate value of the prizes amounted to about four hundred dollars, which was distributed in the following proportions to the successful competitors:—

First Race—Four Oared Boats.

Four Men and Four Oars.

First prize, purse	$150	Third prize	$10
Second prize, purse	$40	Entrance fee $10.	

A silk flag, valued at $25, to go with the first prize.

Second Race—Boys—Two Pairs Sculls.

Seventeen feet smooth work boats.

First prize, purse	$20	Third prize	$2
Second prize	10	Entrance fee $2.	

Third Race—Champion's—One Pair Sculls.

Nineteen feet Whitehall working boats.

First prize, gold medal, and purse of $100—$250.		Third prize, purse	20
Second prize, purse	$30	Fourth prize	10

Each of the boats entered had to pay a fee of $10. The following were the rules governing the size and appointments of the boats:—

The four-oared boats, no restrictions, except that each shall be propelled by a motive power of four men and four oars.

In the two pair of sculls race, the boats shall not be more than seventeen feet long, and smooth work build.

In the single pair of sculls race, the boats shall be not more than nineteen feet long, nor less than four feet five inches in width, and nineteen inches deep; the timbers to be of oak, not more than eleven and a half inches apart, and eleven-sixteenths of an inch thick; the boats to be built smooth work, with four thwarts not less than one inch in thickness; the upper streak to be of oak, not less than half an inch thick; the gunwales to be also of oak, of one inch and three-eighths in thickness. No outriggers, if used, shall be more than four inches outboard to the thole-pins. All the usual loose work and stern sheets may be removed if the party rowing desires. A difference of two inches or less in the length of the boats will not be considered.

The distance to be rowed was five miles—the judges' boat, from which they were to start, being anchored in the middle of the river, opposite the foot of One Hundred and Sixth street. One stake boat was anchored off the foot of Ninety-first street, and the other at the foot of One Hundred and Sixteenth street, and according to the rules they were to be turned twice. "The boats," says the order for the race, "shall row to the southerly stake boat, which must be turned from the west towards the east, then rowing to the northerly stake boat, passing the judges' boat on the east side, and turning said northerly stake-boat from the east towards the west, and turning the stake boat the same as before, and then again to the northerly stake boat, turning it again from the east towards the west, and then back to the place of starting, and hailing the judges' boat on the west side."

The entrances were as follows :—

FOUR-OARED BOATS.

Names of Boats.	*Builders.*
Whitehall	Wm. H. Darling.
Susan Boyd	W. M. Kyle.
Lady Putman	Newman & Randell.
Americus	C. J. Thoms.
Olie	C. L. Ingersoll.

WHITEHALL—*Rowers*—Daniel Holland, James J. Murphy, Michael McLaughlin, Francis L. Parmeton ; Coxswain, J. Cody.

SUSAN BOYD—Thomas Dorr, Thomas Osborn, John Flannagan, John Donnelly ; Coxswain, H. Hervey.

LADY PUTMAN—Stephen Roberts, P. Lynch, Wm. Wood, John Matheson; no coxswain.

AMERICUS—W. H. Dexter, David Smith, G. Braisted, R. Webb; no coxswain.

OLIE—H. Larson, H. Christian, Oliver Oalson, P. Thompson; Coxswain, Wm. Kinney.

TWO PAIRS SCULLS.

Names of Boats.	*Rowers.*	*Builders.*
James Wessels	Richard Neville, John Leary	James Everson.
Alex. Lockwood	Joseph Flock, B. McCarthy	C. J. Thoms.
Katydid	Thomas Dorr, John Osborn	James Everson.
Lucky Jack	John Shanlay, John Coleman	Isaac W. Wilkins.
Wild Irishman	Thomas Kibben, Thomas Sellers	Jas. Williamson.

CHAMPION'S RACE—SINGLE PAIR SCULLS.

Names of Boats.	*Rowers.*	*Builders.*
William Poole	William H. Decker	C. J. Thoms.
Thomas Jefferson	Andrew Fay	J. Donnelly.
Harlem	Stephen Roberts	Fish & Morton.
Elizabeth Everson	Thomas Burns	James Everson.
George J. Ferris	A. J. Scott.	C. C. Ingersoll.

The judges, consisting of Messrs. Sherman Brownell, Charles Fox, D. L. Pettee, John E. Davidson and Francis D. Bigelow, were at their post at the time appointed, but it was 2 o'clock before the boats were started. They were, after some delay, all got in a line, and went off at the word "go," in magnificent style. Away they swept, amid the cheers of the excited multitude. The first mile and a half were performed in seven minutes, the Olie leading the Lady Putman by several boat lengths as she passed the judges' boat, but it became evident that her rival would soon change positions as the race continued. The contest was bravely carried on, and if the Olie was at last forced to yield to superior skill, she kept her place well up with her antagonist. The boats came in in the following order:—

First, Lady Putman; second the Olie; third, the Americus; fourth, the Whitehall; fifth, the Susan Boyd. The five miles was accomplished by the Lady Putman in 36 minutes.

The Lady Putman is from the establishment of Messrs. Newman & Randall, of this city. We learn that she will be immediately taken to the Crystal Palace and placed in the Fair of the American Institute.

As soon as the excitement of the first race had subsided, everything was made ready for the second. After considerable delay the two pair sculls, rowed by boys, were started, and after an exciting and well-contested race passed the judges' boat, as follows:—

The James Wessells, the Lucky Jack, the Alexander Lockwood, and the Wild Irishman.

The Katydid retired from the contest. The time made by the James Wessels was 45m. 57s.

The most exciting race was that between the single pair scull boats, which was watched with eager interest throughout. The general favorite appeared to be Mr. Decker, and we are told that there were bets made of one hundred dollars to fifty upon him. In this instance, however, he was defeated, although his friends were most sanguine for his success. He came in second, but was ruled out of the race, in consequence of his having passed the judges' boat to the eastward instead of to the westward, as set down in the regulations. The following is the order in which they came in:—

The Elizabeth Everson, the William Poole (ruled out), and the George J. Ferris. The Thomas Jefferson was obliged to give up the race at the end of the first two miles, one of her thole-pins having given way. It is but justice to her rower, Mr. Fay, to state that he was doing his work well, and was following up the first boat pretty hard when the accident happened.

Mr. Stephen Roberts displayed great power of endurance, for, although not the successful competitor for the prize medal, he nevertheless gave his antagonists more work than they anticipated, when they considered that Mr. Roberts had rowed in one of the previous races. He, however, did not continue the race to the end.

The boat which seemed to attract most attention among the nineteen feet boats, was the one which was rowed by Mr. Decker. Built by Mr. C. J. Thoms.

The boats of Mr. Ingersoll were fully up to all his past endeavors.

The nineteen feet working boat, Harlem, rowed by Mr. Roberts wa built by Messrs. Fish and Morton.

Art. XVIII.—PRESENTATION TO CAPTAIN INGRAHAM, U. S. NAVY.

A MASS-MEETING held two years ago in this city, voted a gold medal to Captain DUNCAN N. INGRAHAM, U. S. NAVY, for his noble rescue of KOSZTA. On Thursday evening, 11th October, Captain Ingraham, accompanied by a few friends, met the Committee appointed for the purpose at the Metropolitan Hotel, and there received the handsome testimonial of his gallantry, bearing appropriate devices of the special occasion which it commemorates.

Its face represents a portion of the globe, above which floats an eagle rejoicing in the light of the sun, and grasping in his talons the olive and the thunder, the former suspended over America, the latter ready to be launched at Europe. Above is the device

CIVIL AND RELIGIOUS LIBERTY.

And below—

MASS MEETING OF UNITED DEMOCRACIES, NEW-YORK.
CAPTAIN DUNCAN N. INGRAHAM, SEPT. 22, 1853.

On the reverse is a representation of the Goddess of Liberty holding a protecting arm over Captain Ingraham and Koszta, who are in a boat, while the American and Austrian vessels are to be seen in the distance. On the margin are the words of Captain Ingraham to Koszta—

DO YOU WANT THE PROTECTION OF THE UNITED STATES?
THEN YOU SHALL HAVE IT.

And below—

INGRAHAM. SMYRNA.
JULY 2, M,DCCCLIII.

The testimonial is a fine one, and alike creditable to the givers and the receiver.

Art. XIX.—COMMERCIAL STATISTICS.

COASTERS, THIRD QUARTER.

Arrivals under Registers,	149	vessels,	66,270 tons.
" " License,	362	"	77,032 "
Clearances under Register,	323	"	130,460 "
" " License,	859	"	235,441 "

ARRIVALS OF UNITED STATES VESSELS, THIRD QUARTER, 1855.

	VESSELS.	TONS.	MEN.
Swedish West Indies	1	94.25	5
Danish West Indies	4	801	34
Hamburg	3	1,856.50	51
Bremen	7	9,636.50	386
Holland	5	3,254.25	98
Dutch West Indies	3	680.25	26
" East Indies	1	586.25	17
Belgium	6	4,218.75	116
England	127	140,074	3,030
Scotland,	8	4,769.50	132
Gibraltar,	1	236.50	7
Canada,	1	245.50	11
British North America,	24	4,989.75	181
" West Indies,	23	5,002.50	190
" Honduras,	2	522.75	20
" Guiana,	4	965	37
" East Indies,	4	2,530.25	85
France, Atlantic,	34	35,447.50	1,009
" Mediterranean,	9	3,262 25	105
Spain, Atlantic,	1	242.25	8
" Mediterranean,	4	817.25	32
" Canaries,	2	469.75	18
" Cuba,	153	56,214.75	1,946
" Porto Rico	16	2,937.50	126
Portugal,	2	365.50	18
" Cape de Verdes,	2	418	17
" West Indies,	15	5,243.75	162
Tuscany,	6	2,691.25	82
Sicily,	6	1,915	65
Austria,	1	254.75	8
Africa,	9	1,753.75	75
Hayti,	32	5,392.75	244
Mexico,	10	3,761.25	131
Central America,	7	5,185.25	174
New-Grenada,	8	8,847.75	233
Venezuela,	11	2,362.25	100
Brazil,	21	6,274.50	241
Argentine Republic,	6	1,660.50	56
Chili,	3	3,261.75	113
Peru,	1	669.75	22
China,	7	6,174.75	193
	591	336,087.25	10,204

FOREIGN ARRIVALS THIRD QUARTER, 1855.

	VESSELS.	TONS.	MEN.
Prussian and Holland	1	859.75	25
Sweden and Norway	3	871.25	27
Denmark, per Porto Rico	1	132	6
" Hayti	1	140.75	8
" Venezuela	2	399.25	16
	8	2,403.00	82
Hamburg	8	4,868.50	151
" per China	1	557.75	20
	9	5,426.25	171
Bremen	19	10,808.25	356
" per Holland	1	404	15
" Cuba	1	383.50	14
" Venezuela	2	419.50	15
	23	12,015.25	400
Oldenburg, per Bremen	5	2,859.25	94
" Venezuela	3	732.50	26
	8	3,591.75	120
Holland	2	570.50	23
" per Sicily	1	185.25	8
	3	755.75	31
England	5	2,904	103
Scotland	3	1,430	51
British North America	92	12,439.50	541
" West Indies	39	4,977	231
" Guiana	1	234	10
" New-Grenada	1	395	14
Danish West Indies	1	125	6
Hamburg	1	163	20
Spain, Atlantic,	2	482.25	18
Cuba	5	868	37
Porto Rico	5	814.75	36
Sardinia	1	362	12
Tuscany	2	436.25	16
Sicily	1	191	8
Hayti	7	1,552	60
Brazil	5	1,359.25	62
Africa	1	149	7
France, Atlantic	1	96.25	8
" North American Colony	4	438.50	38
	177	29,417.50	1,278
Spain via Cuba	1	202	8
Portugal,	3	568	24
Portugese West Indies	4	697	30
	8	1,467	62
Sardinia	2	593	23
Sicily	4	1,047.50	42
Austria	1	928.75	20
Venezuela	1	217.25	9
Brazil	1	156	7
Chili via Venezuela	1	194.25	7
	10	3,136.75	108
Total	246	58,213	2,252

ABSTRACT OF U. S. CLEARANCES, THIRD QUARTER, 1855.

	VESSELS.	TONS.	MEN.
Sweden	1	517	14
Danish West Indies	5	1,136.25	47
Bremen	5	6,187.50	312
Holland	3	1,945.25	50
Dutch West Indies	2	498	20
" East Indies	3	1,236.75	43
	19	11,520.75	486
Belgium	10	8,491.75	282
England	68	91,246	2,502
Scotland	7	4,166.50	117
Ireland	2	877.50	24
Gibraltar	4	899.75	36
Canadas	5	2,738.25	76
British North America	61	31,056.50	858
" West Indies	14	2,849.25	106
" Honduras	2	522.25	20
" Guiana	3	742.	29
" Australia	5	3,672.50	97
" East Indies	5	3,319.50	108
	186	150,581.75	4,255
France, Atlantic	18	23,388.25	825
" Mediterranean	7	2,515.50	84
" West Indies	1	149.50	7
	26	26,053.25	916
Spain, Atlantic	15	4,031	142
" Mediterranean	19	4,444.50	168
" Cuba	58	27,874.50	1,125
" Porto Rico	7	1,453.75	56
	99	37,803.75	1,491
Portugal	7	2,180.50	69
" Cape de Verdes	3	570.75	24
" Azores	1	118.50	6
	11	2,869.75	99
Sicily	1	395	10
Turkey in Europe	3	825.50	28
Africa	7	1,883.75	61
Hayti	18	3,255.25	139
Mexico	5	1,085.25	46
Central America	10	10,302.75	392
New-Grenada	31	18,196.50	621
Venezuela	14	3,332	129
Brazil	9	2,123.75	79
Cisplatine Republic	5	1,848.25	65
Argentine Republic	10	3,556.75	119
Chili	1	647	17
Peru	2	1,561	36
China	4	3,398.75	90
	120	52,411.50	1,832
Total,	461	281,246.75	9,079

ABSTRACT OF CLEARANCES OF FOREIGN VESSELS, THIRD QUARTER, 1855.

	VESSELS.	TONS.	MEN.
Sweden and Norway	1	287.25	11
" to British North America	1	467.50	10
" Spain, Atlantic	1	416.50	14
	3	1,171.25	35
Danish to Porto Rico	1	132	6
" to San Domingo	1	140.75	10
	2	272.75	16
Hamburg	12	6,576.25	220
Bremen	9	6,008.50	181
" to Holland	1	357.25	13
" " British East Indies	4	2,179.50	77
" " Cuba	2	924.25	36
" " Hayti	1	251.50	11
" " Venezuela	1	200.25	9
	30	16,497.50	547
Holland	2	954.25	28
" to Turkey in Europe	1	155.25	7
	3	1,109.50	35
Hanover to Prussia	1	179.50	11
Oldenburg to Bremen	2	1,244.25	19
" " Hanover	1	175	7
" " British East Indies	3	1,609.25	102
" " Hayti	2	529 50	20
	9	3,737.50	159
Great Britain to Swedish West Indies	1	85.50	6
" " Danish West Indies	1	115.25	7
" " Hamburg	1	864	28
" " England	2	1,488	74
" " Scotland	4	1,382.75	39
" " Ireland	2	556.25	20
" " Canada	1	179	9
" " British North America	133	25,332	983
" " British West Indies	34	4,117.50	254
" " Spain, Atlantic	2	604.50	21
" " Porto Rico	1	189	6
" " Central America	1	73.50	4
" " Cisplatine Republic	1	328.75	10
France to French West Indies	1	103	10
" " North American Colony	4	488.50	38
	189	35,907.00	1509
Spain to Spain, Mediterranean	1	370.50	18
Portugal to Portugal	7	1,474.75	73
" " Cape de Verdes	1	243.75	10
" " Hayti	1	183.25	10
" " Brazil	1	124	9
" " Madeira	1	67.50	12
	12	2,463 75	132
Sardinia to Sardinia	1	298.50	11
Sicily to England	1	272	13
" " Ireland	1	239.50	10
" " France, Mediterranean	2	462.50	21
" " Sicily	1	286.25	14
" " Austria	1	136.50	8
	7	1,695.25	77
Venezuela to Venezuela	1	217.25	7
Brazil to Brazil	1	395	12
Cisplatine Republic to New-Grenada	1	104.50	8
Chili to Venezuela	1	194.25	9
	4	911.00	36
Total,	259	63,765,00	2,546

Art. XX.—"EFFICIENCY IN THE NAVY."

For years there have been loud and constant complaints, both in and out of the service, of the inefficiency of many officers upon the Navy List; of their incapability to discharge all their duties at sea.

The Navy List was quite large enough if each officer could or would perform his whole duty; but when a large minority of the number were unavailable for sea-service most of the time, it became exceedingly hard upon the willing and working majority.

The friends of the Navy, and especially the friends of the efficient portion of its *personnel*, called upon the executive, who *had the power*, to remove or retire on leave or furlough the inefficient, and advance the efficient to their places. It was, of course, a measure of responsibility which the Executive was disinclined to exercise—a *new* step, which he most prudently hesitated to take without the advice and legal direction of the legislature of the country.

If anything was to be done, it became necessary for Congress to take the initiative; and even then it was the least part of good policy for the Executive to be careful that the ultimate responsibility should devolve by law on the Navy itself.

Accordingly the "Act to Promote the Efficiency of the Navy" was approved by the President, Feb. 28th, 1855, directing the Executive to organize a board of the *navy officers themselves* to decide who and which of their brother officers should be retained in active service, retired on leave or on furlough and placed out of the line of promotion, or dropped from the service altogether. It became the duty of the President, under this act, if he approved of the proceedings of the board, to advance to the vacant places occasioned by its decision those who were retained according to their seniority upon the list.

This seemed to be the wisest course that could be taken. Navy officers themselves were supposed to be best qualified to decide upon the competency and efficiency of their brethren; and upon them was devolved the responsibility by Congress, through the Executive. The prevailing sentiment was, that if officers reputed to be efficient could not withstand the scrutiny of a committee of their own grades, they should not be retained.

It was quite evident to all that the Navy required *pruning;* and the method which Congress adopted seemed, upon the whole, to be the best that could be devised. The board was organized; was more than a month in session at Washington; submitted its proceedings and conclusions to the Secretary of the Navy, by whom they were submitted to the President. Had the Secretary disapproved of a solitary act of the board—had he discriminated upon its doings, he would, by that discrimination, have shifted the responsibility from the Navy Board, where Congress placed it, to his

own shoulders. Or, if the President, when it came to his hands, had chosen to withhold his approval on the ground that several officers had been retired, or dropped, whom he believed to be efficient, the whole object of the bill would have been defeated—the whole lost.

The best course has been pursued. The Executive has approved the action of the board as contemplated by Congress. It was wisdom on his part, for he has power to renominate deserving officers who have been dropped, or placed out of the line of promotion, while he leaves no room for complaint on the part of those who are not deserving.

It is no part of our purpose to discuss the action of the board on individual cases, but there seems to have been an evident departure from the exact letter and spirit of the act by which it was created, and which so carefully directed and pointed out its duties.

We shall resume this subject in our next.

Art. XXI.—THE OCEAN BIRD.

In consequence of the publication of an article in one of the daily papers, relative to this vessel, which stands related to an expression from the Senior Editor of the United States Nautical Magazine and Naval Journal, he deems it due to himself to say, that it never has been his practice to "stake" his "reputation" on the performance of any vessel without some qualification, and that whatever he may have said in reference to the vessel's ability to cross the Atlantic in any given time, now that her topsides have been enlarged, that expression was coupled with a proviso in the performance of the engine, or the number of revolutions she might be able to make, without which qualification, or that of her draught of water, he has not allowed himself to be compromised. The following certificate, given by Captain Graham, will serve to show, to some extent, the amount of confidence he had in the alteration of her internal arrangement, and of the enlargement of the top-sides of the vessel, and, at the same time, a reduction of the propelling power.

New-York, Feb., 1855.

To whom it may concern:

This is to certify that having purchased the vessel commonly known as the "six-day steamer," in an unfinished state, and having made such alterations or enlargements from her original plans as seemed best adapted to my own interests: therefore, her builder, John W. Griffiths, is in no way or manner responsible for her performance, or for her safety as a transit vessel, either of passengers or merchandize.

John Graham.

Art. XXII.—NAVY NEWS.

RESIGNATION.

Passed Assistant Surgeon—A. Nelson Bell.

PROMOTIONS AND APPOINTMENTS.

In the Marine Corps.

First Lieutenant—F. B. McNeill, to be a captain from the 19th August, vice Stark, deceased. Second Lieutenant—Israel Green, to be a first lieutenant, vice Sutherland, promoted. Second Lieutenant—Jacob Reid, to be a first lieutenant from the 19th August, vice McNeill, promoted. Alexander W. Stark, of Virginia, David M. Cohen, of Maryland, and James Lewis, of Pennsylvania, appointed to be second lieutenants.

Rev. Robert Givin, of Philadelphia, to be Chaplain.

At Portsmouth (New-Hampshire) Navy Yard, Commander Pickering, recently promoted, takes the place of Captain Pearson, also recently promoted and detached. Lieut. A. G. Cleary has been ordered to that yard, in place of Pickering, promoted.

At Boston, Commander Theo. P. Green, recently promoted, takes the place of Captain Selfridge, also recently promoted and detached. Lieut. Charles S. McDonough has been ordered to that yard in place of Green, promoted. Lieut. Johnson B. Creighton has also been ordered to the Boston yard, in place of Commander Henry French, recently promoted and detached.

On the Boston receiving ship, Commander S. F. Hazard, recently promoted, has been ordered to take the command, in place of Captain William S. Walker, recently promoted and detached. Commander Charles Green, recently promoted, has been detached from that ship.

At New-York Navy Yard, Commander John DeCamp, recently promoted, takes the place of Captain Hudson, also recently promoted and detached.

Lieutenants T. M. Brasher and J. W. A. Nicholson have been ordered to that yard. Commander Alfred Taylor, Lieut. A. F. V. Gray, Surgeon, Robert T. Barry, and P. A. Surgeon Ashton Miles have been ordered to the Rendezvous. Commander T. G. Benham, Lieut. J. G. Carter, Surgeon S. Jackson, and Assistant Surgeon George Peck, detached. Lieut. George Colvocoressis has been detached from the Receiving-ship and ordered to the "Levant."

The following officers have reported for duty, on board the "Levant," now fitting out at this navy yard, for the East Indies: Commander—William Smith; Purser—B. J. Cahoone; Lieutenants—George Colvocoressis, J. J. Guthrie, James Higgins, Earl English, and Julius G. Heileman; Surgeon—John H. Wright; Marine officer—Brevet Capt. J. D. Simms; Mas-

ter—H. A. Adams; Assistant Surgeon—A. L. Gihon; Boatswain—T. C Berry; Gunner—G. H. Baker; Carpenter—Edward Williams; Sail-maker—D. C. Brayton.

The "SAN JACINTO," Flag-ship of the East India squadron, sailed on the 25th ult. The following is a complete list of her officers: Commodore—James Armstrong; Commander—Henry H. Bell; Fleet Surgeon—W. Maxwell Wood; Captain Marine Corps—A. N. Brevoort; Lieutenant—H. H. Lewis; Purser—John O. Bradford; Lieutenants—James C. Williamson, John Rutledge, N. C. Bryant, S. P. Carter, R. T. Bowen; Assistant Surgeons—R. P. Daniel, I. E. Sample; Chief Engineer—B. F. Isherwood; First Assistant Engineers—Andrew Lauton, E. S. DeLuce; Second Assistant Engineers—W. B. Brooks, H. W. Spooner; Third Assistant Engineers—H. C. Victor, Ten Eyck Biles, C. H. Baker; Boatswain—Charles Johnson; Gunner—I. C. Ritter; Carpenter—Asa Poinsett; Sail-maker, Stephen Seaman.

At PHILADELPHIA, Commander S. W. Godon, recently promoted, has been detached. Lieuts. Wm. Ronkendorff and Wm. W. Roberts have been ordered to that yard.

On the Receiving-ship, Commander Wm. S. Young, recently promoted, has been ordered to the command in place of Capt. Frederick Engle, recently promoted and detached. Lieuts. J. Hogan Brown and Wm. E. Hopkins have been ordered to that vessel.

At the Rendezvous, Commander John Goldsborough, recently promoted, takes the place of Captain Hollins, also recently promoted and detached.

The following is a correct list of officers of the United States sloop of war St. Louis, at Philadelphia: Commander—J. W. Livingston. Lieutenants—1st, George W. Doty; 2d, Egbert Thompson; 3d, E. C. Stout; 4th, R. C. Duvall. Purser—Charles C. Upham. Surgeon—Samuel Jackson, Jr. Acting-Master—B. B. Taylor. Assistant Surgeon—J. S. Kitchen. Boatswain—Thomas Smith. Gunner—M. A. Lane. Carpenter—J. T. Rustic. Sail-maker—S. H. Boutwell. Purser's Steward—F. F. Borrell. The St. Louis is ordered to the coast of Africa, is all ready for sea, and will leave by the 10th of November. This will be an excellent opportunity to forward letters, &c., to officers on that station.

At the Baltimore rendezvous, Commander Frederick Chatard, recently promoted, takes the place of Commander Murray Mason, detached. Commander Roger Perry has also been detached from that rendezvous. Lieut. Edmund Lanier has been ordered there.

At the WASHINGTON YARD, Commander Joseph Lanman, recently promoted, takes the place of Commander Pettigru, detached.

At the NORFOLK YARD, Commander Charles H. Poor has been ordered to take the place of Capt. Samuel Barron, recently promoted and detached.

On the Receiving-ship at Norfolk, Commander John R. Tucker takes the place (in command) of Commander John Manning, detached.

The HOME SQUADRON, Commodore Paulding, the flag-ship "Potomac," sloops of war "Saratoga" and "Cyane," are at New-York; the steamer "Fulton," at Boston.

Art. XXIII.—NOTICES TO MARINERS.

BEACON LIGHT AT BRISTOL FERRY, RHODE ISLAND.—A new light-keeper's house, and a beacon-light tower connected therewith, have been erected on the north shore of Bristol Ferry, Rhode Island, a few rods east from the ferry wharf. The light will be transferred from the present open frame structure to the new tower, on the evening of Thursday, October 4th, after which date the old frame will be removed, and the light maintained without change on the new tower. This transfer will move the light fifty-three feet N. ¾ W. (magnetic) from its present place, and will raise it four and a-half feet above its present height. It will be twenty-three feet above the base of the tower, and thirty feet above low water. The tower and house are white.

FRANKLIN ISLAND LIGHTHOUSE, MAINE.—Notice is hereby given that a new lighthouse and keeper's dwelling have been erected on Franklin Island, Maine.

The tower is of brick, painted white, and the dwelling house is painted brown. The lantern is painted black.

The centre of the light is thirty-five feet above the ground, and fifty-four feet above the level of ordinary high water.

In good weather the light will be visible at a distance of twelve nautical miles.

The illuminating apparatus is a Fresnel lens of the fourth order, and the light will be a fixed light until the 1st of January, 1856, when a fixed light, varied by flashes, will be shown, and will be continued during every night thereafter.

The following compass bearings have been taken from the new lighthouse:

Seguin Lighthouse, S. W. by W. ¾ W., distant 22 miles.

Penmaquid Point Lighthouse, W. by S. ½ S., distant 8 miles.

Marshall's Point Lighthouse, E. ½ N., distant 6 miles.

Menheigin Lighthouse, S. ¾ E., distant 9 miles.

PETIT MENAN LIGHTHOUSE, MAINE.—A new lighthouse and keeper's dwellings have been erected on Petit Menan Island, Maine.

The tower is built of cut granite, and is of the natural color of the stone. The dwellings are painted brown, and the iron work of the lantern is black.

The centre of the light is 109 feet above the ground, and 125 feet above the level of ordinary high water.

The lightwill be visible in good weather at a distance of 17 nautical miles.

The illuminating apparatus is a lens of the second order of the system of Fresnel, and the light will be a fixed liight until the 1st of January, 1856, when a fixed light, varied by flashes, will be shown, and will be continued during every night thereafter.

The following magnetic bearings have been taken from the lighthouse:

To Narraguagus Lighthouse, N E. ¾ N., distant 5½ miles.

Nashe's Island Lighthouse, N. E. by E., distant 8 miles.

Jackson's Ledge, E., distant 4 miles.

South-east Rock, S. E. by S., distant 4 miles.

Simm's Rock, S. ½ E., distant 3 miles.

Buoy on Petit Menan Bar, N. ¾ W., distant 1½ miles.

Baker's Island Lighthouse, W. by S., distant 18 miles.

BARS AND INLETS.—Depth of water on the bars and inlets of Cape Fear river, reported by S. B. Davis, foreman of class No. 4 of Pilots, September 29, measurement taken at low water:

New Inlet Bar, 6 feet 6 inches; New Inlet Rip, 7 feet; Western Bar, 8 feet 6 inches; Western Rip, 7 feet 6 inches; Main Bar, 4 feet.

The tide rose 7 feet on the day the above measurement was taken.

SCREW PILE BEACON ON THE MIDDLE GROUND, SAND KEY CHANNEL, HARBOR OF KEY WEST, FLORIDA.—Notice is hereby given that a beacon has been placed on the Middle Ground, Sand Key Channel, harbor of Key West.

The beacon, on a single shaft, is octagonal in shape, and surmounted by an octagonal box. The shaft, top of cage, and the box are painted black. The sides of the cage are painted white.

The following are the dimensions of this beacon :

Length of shaft above low water, 18 feet; height of cage, 7 feet; height of box above cage, 4 feet; height of box, 2 feet; diameter of cage, 6 feet; whole height of beacon above low water, 32 feet.

The following magnetic bearings from this beacon, will enable mariners to lay it down on their charts :

To Key West Lights, N. E. ¾ E. or (N. 53½ E.)

To Sand Key Lights, S. ¼ E. or (S. 2¾ E.)

To N. W. Channel Light, (N. 2 W.)

PHILADELPHIA, Oct. 5, 1855.

BAKER'S ISLAND LIGHTHOUSE, MAINE.—Notice is hereby given that a new lighthouse and keeper's dwelling have been erected on Baker's Island, Maine.

The tower is of brick, painted white ; the dwelling is colored brown, and the iron work of the lantern is black.

The centre of the light is 35 feet above the ground, and 105 feet above the level of ordinary water.

The light will be visible in good weather at a distance of 15 nautical miles.

The illuminating apparatus is a Fresnel lens of the fourth order, and the light will be a fixed light until the 1st of January, 1856, when a fixed light, varied by flashes, will be shown, and will be continued during every night thereafter.

The following magnetic bearings have been taken from the lighthouse :

Bear Island Lighthouse, N. W. by N., distant 5½ miles.

Petit Menan Lighthouse, E. by N., distant 18 miles.

Monument on Bunker's Dry Ledge, N. by W., distant 3 miles.

FOG-BELL AT FORT CARROLL, SOLLER'S POINT FLATS, PATAPSCO RIVER, MD.—A bell to be rung in foggy weather by machinery, has been erected near the light at Fort Carroll, Soller's Point Flats, Patapsco river, near Baltimore, Md.

It is elevated on a frame work about 30 feet above the level of the river.

It will strike six times per minute, at intervals of ten seconds, and can be heard at a distance of from one to five miles, according to the force and direetion of the wind.

BALTIMORE, Sept. 19, 1855.

The light-vessel stationed on the Middle Ground, off Stratford, Conn., is to be taken to New-Bedford for repairs. Her place will be supplied by a large boat from the Navy Yard.

LONG ISLAND HEAD LIGHT.—A fifth order lens light, illuminating 270 degrees, has been placed in the lantern of the lighthouse on Long Island Head, Boston harbor, and was first lighted on thd 24th inst.

SHIP SHOAL AND ATCHAFALAYA LIGHT-VESSEL, LOUISIANA.—Official information has been received at the office of the Lighthouse Board, that the light-vessel stationed near Ship Shoal, and the one stationed in Atchafalaya Bay, Louisiana, were driven from their moorings during the heavy gale on that coast, on Friday, the 21st ult. These light vessels will be restored to their respective stations with all practicable dispatch, of which due notice will be given

The bell-boat at the entrance of Mobile bay has been restored to her proper position outside the bar.

A buoy, red and black horizontal stripes, has been placed on Senator Shoal, off Hyannis.

A buoy, red and black horizontal stripes, has been placed on the middle ground, off Hyannis.

A red buoy, No. 6, has been placed on the S. E part of the Handkerchief.

A red buoy, No. 10, has been placed on the East end of the Broken Ground of the Horse Shoe.

LEWES, Del., Oct. 11, 6 A. M —Mr. John Marshall, pilot, from a cruise, landed last night, and reports the bell-float off Fenwick Island buoy, much injured, with one clapper attached, the rest having been broken off by the severity of the late storm.

Notice is hereby given that the iron buoy on Davis' Ledge has been removed, and a second class nun buoy placed in the stead. It is painted black, with the words " Davis' Ledge" in white letters on three sides.

Light-boat Brandywine sailed from New Bedford, 4th Oct., in tow of steamtug America, for Five Fathom shoal, off Cape May, where she is to be stationed.

Official information has been received at the office of the Lighthouse Board, and notice is hereby given, that pursuant to the intentions expressed in an advertisement from Trinity House, London, dated 30th May last, the following changes have taken place in the Prince's channel, viz :

The Tongue light vessel has been moored about three-fourths of a mile to the northeastward, in ten fathoms, with the following marks and bearings :

Minister East Mills, on with the centre of the Coast Guard station, in Westgate Bay, S. by W. ½ W.

Margate Old Church, the apparent width of its tower, opened to the eastward of the Pier Lighthouse, south.

Shingles beacon, N. W. ¾ N. Northeast spit, S. E. ½ S.

N. B.—Mariners are cautioned always to pass to the northward of this light-vessel.

The northeast Tongue buoy has been moved about half a mile westward, into 4½ fathoms, with St. Peter's Church in line with Margate New Church, S. by E. ¼ E.

Monckton beacon, twice its apparent length, on the east end of Lower Hale Grove, S. by W. ¾ W.

North Tongue buoy, W. by N. ¾ N. Shingles beacon, N. E. by N.

The North Tongue buoy has been moved about one-fourth of a mile to the westward, into 6 fathoms, with the west end of Cleeve Wood, just open to the westward of Birchington West Mill, south.

Sarr Mill, twice its apparent length, open to the eastward of Margate Hook beacon, S. by W. ¾ W.

Northeast Pan Sand buoy, W. by N. ½ N. Girdler spit, N. by W. ¾ W.

The Girdler light vessel has been moved about one-eighth of a mile to the southward, into 3½ fathoms, with Ash Church spire, midway between George's farm and Reculvers, S. ½ E.

West end of Cleeve Wood, open to the eastward of St. Nicholas Eastern Coast Guard station, S. by E. ¾ E.

Redding-street beacon, its apparent length open to the eastward of Northdown Tower, S. E. ¼ S.

Shivering Sand buoy, N. N. W. West Pan Sand buoy, S. by E. ½ E.

The following new buoys have also been placed in this vicinity, viz :

A chequered black and white buoy, marked "East Tongue," has been placed in 4 fathoms, with the following marks and bearings, viz :

The first house, next east of St. Nicholas Church, in line with St. Nicholas Western Coast Guard station, S. W. ¼ S.

Minster West Mill, in line with the west end of the east cliff of Westgate bay, S. by W. ¾ W.

West Tongue buoy, W. by N. ¼ N. Wedge buoy, W. by S. ½ S.

A red buoy, marked "West Girdler," in 2½ fathoms, with Ash Church spire just open to westward of Reculvers village, S. ¼ E.

West end of Cleeve Wood, open to the westward of Margate Hook beacon, the apparent length of the beacon, S. by E. ¾ E.

Shivering Sand buoy, N. N. W. ¾ W.

Girdler beacon and South Girdler buoy, in line E. S. E.

Note.—The foregoing bearings are all magnetic, and the depths, those of low water spring tides.

North Pan Sand Buoy.—It is intended that, on or about the 1st of October next, the black and white chequered buoy at this station shall be taken away and replaced by a buoy painted black.

Beacon on Londoner Rock, off Thatcher's Island, Cape Ann, Massachusetts.—A wrought iron shaft, forty feet high, surmounted by an octagonal lattice or open-work cast iron day-mark, seven feet high and five feet in diameter, painted black, has been erected upon the Londoner Rock, off Thatcher's Island, Cape Ann, Massachusetts.

The following are magnetic bearings from the beacon, viz :

To Dry Salvages, N. ¾ E.

To Straitsmouth Island Lighthouse, N. N. W.

To Northern Lighthouse, Thatcher's Island, N. W. ¼ W.

To Southern Lighthouse, Thatcher's Island, N. W. by W. ¾ W.

To Eastern Point Lighthouse, S. W. by W. ¼ W.

Note.—The notice published on the 18th ultimo was incorrect in the bearing of the Northern lighthouse at Thatcher's Island.

The following note came to hand too late for our last number.

Buxton, Maine, Sept. 22.

R. M. Forbes, Esq.

Dear sir,—In looking over the copy of the letter I wrote you, I find a slight error. In page 2 of the copy, line 14, "We have only to knot the first stops on the yard;" this should read, We have only to *knot the foot-stops over the yard.* Will you oblige me by correcting the same, if it is not too ate.

Yours, very truly,
Geo. H. Bradbury.

Art. XXIV.—DISASTERS AT SEA.

STEAMERS.

C. Vanderbilt, New-Orleans for Key West, put back, leaky, Sept. 12.
Eudora, driven ashore at Constitution Maule, during a Norther, Aug, 14.
Henry Wells, New-York for Carthagena, put into Kingston, Jamaica, in distress, Sept. 7.
Baltimore, was totally lost near Sheboygan Wis.
Sebastopol, was totally lost on L. Michigan, Sept. Six lives lost.
Forest City (propeller), Buffalo for Chicago, was in collision with the Asia; both vessels sank.
Lady Elgin, broke her piston-rod near Mackinaw, towed to Collingwood to repair.
Ohio, lost both smoke-pipes near Fairport, L. Erie, put in there to repair.
Canada (steam tug), burned to the water's edge, on St. Clair River, Oct. 6.
Falcon (propeller), in collision with unknown vessel below Pt. au Pellu light, lost smoke-stack, &c., Sept. 29.
Cleveland, at Green Bay, L. Michigan, broke her condenser, Sept. 30.
Minnesota, for Dunkirk, carried away smoke-pipe, coming out Maumee Bay, towed into Detroit to repair, Oct. 6.

SHIPS.

Faneuil Hall, Baltimore for Calcutta, lost on Abrolhos Bank, July 5.
Ashburton, New Castle, Eng., for Boston, lost bulwarks, stanchions, &c., in a heavy gale.
Sea-Lion, Nuevitas for London, struck by lightning, damaged sails, rigging, &c, leaking badly.
Sparkling Sea, Boston for Callao, put into Rio Janeiro, prior to Aug. 25, leaky.
John Cumming, Callao for United States, put into Valparaiso, in distress.
Wm. Penn, Chincha Islands for Hampton Roads, went ashore on Hatteras Shoal, Sept. 13, total loss.
Nonpareil (Fr.) from the Crimea, run into by a French steamer, carried away jibboom, &c.
Cowper, (Amer.) Trapani for Boston, put into New-York, Sept. 11, leaky.
Corinne, Calcutta for Boston, arrived at latter port, leaking badly.
Sea-Serpent, New-York for San Francisco, in a severe gale, lost main-topmast, split sails, &c.
Gertrude and Maria, for Callao, put back to San Francisco, with loss of spars and rigging.
Amelia, Rio Janeiro, struck by a white squall, carried away foretopmast, &c.
Revere, Boston for Callao, lost an anchor, topmast and some sails, Sept. 19.
Venice, New-Orleans for Boston, much damaged in a gale, 17th Sept., put back to repair.
Cohota, Boston for Melbourne, got ashore on the Toddy Rocks, got off after cutting away masts, &c., Sept. 20.
Unknown, totally lost at Key Vaccas. All hands perished.
Jacob Prentiss, Memel for Bristol, stranded on the Scaw Reef, and is very leaky, Aug. 29.
Saranac, Liverpool for Philadelphia, lost flying-jib, jib-guys, &c., in collision with unknown schr., Sept. 22.
Wilson Kennedy, returning from Gaspe to Quebec, leaky, Sept. 14.
Rebecca, Bremen for New-York, had deck swept by a heavy sea, lost booby-hatch, &c., in a heavy gale, Aug. 10.
Helen, New-Castle for New-Haven, U. S., put into Aberdeen, in distress, Sept. 1.
Geo. A. Hopley, Liverpool for Charleston, lost sails, twisted off rudder-head, &c., in a hurricane, Sept. 16.
John N. Gosler, San Francisco for Hong-Kong, foundered at sea, lat. 45 N., lon. 147.40 E. Capt. and crew saved.

BARQUES.

Utah, New-York for W. coast of Africa, in collision with unknown schr., hull, sails and rigging much damaged.
Annie, (Br.) Pictou, N. S., for Boston, in collision, off Cape Cod, 23d Sept., with sch. Chesapeake, much damaged.
Pilgrim, New-York for Mobile, ashore on Loggerhead Key, Tortugas, night of 4th Sept.
Broosa, Carribean Sea for Baltimore, put into Key West, 14th Sept., leaking badly.
Ottawa, Havana for New-York, lost jibboom, boat, &c., in a gale, Sept. 19.
Edna, New-York for Rio Grande, Brazil, wrecked, Aug. 12, about 60 miles N. E. of her destination.
Lucia Maria, Salem for Montevideo, shipped a sea, which stove in bulwarks, &c., July 25.
T. Partridge, Rio Janeiro for Baltimore, got ashore on Thomas's Point, Oct. 1.
America, New-Orleans for Boston, put into Charleston, Sept. 30, in distress, leaky.
Augustine Victorine, (Fr.) Gonaives for Marseilles, ran ashore at Man-o'War Bay; cargo saved, hull total loss.
Ranger, Cardenas for Holmes' Hole, split sails, &c., in a heavy gale, Sept. 20.
Montjoe, (Br.) found water-logged capt. and crew saved, Sept. 4.

Kathleen, New-York for Montevideo, lost mainmast, &c., in collision with sch. Enchantress, Sept. 27.
Content, (Fr.) Martinico for Marseilles, totally lost on the South side of St. Croix Island, Aug. 24.
Warren Hallet, at Boston, lost jibboom, &c., in collision with unknown sch., Oct. 6.
Sarah Park, at Baltimore from Liverpool, lost main-topsail, &c., in a heavy gale, Sept. 24.
Gaspe, lost on the East end of Grand Cayman, Aug. 17.
Jeannette, Santa Cruz, Cuba, for England, ashore on Jourdaille Keys, Aug.; crew saved.
Elizabeth Cremer, Jamaica for Scotland, went ashore on Jourdaille Keys, Aug.
Haidee, Liverpool for San Francisco, put into Montevideo, July 10, leaky.
Lucinda, Cardiff for Boston, put into Portland, Oct. 6, leaky.
Lady Pierce, San Francisco for Hong-Kong, totally lost at the Ladrone Islands, July 1.
Unknown vessel, 250 tons, was seen Oct. 1, lat. 30 52, lon. 78 30, bottom up.
Catharine Augusta, from St. Thomas, put into Pernambuco, Aug. 1, in distress.
Globe, New Castle, Eng., for New-York, lost fore-topsail-yard, split sails, &c., in a heavy gale.
Montego, Shediac for Liverpool, water-logged and abandoned.
Emily, New-Bedford for Pacific, put back leaky, having struck on Mishan Ledge, Oct. 15.
Sirene, Valparaiso for San Francisco, foundered at her anchors at Cape St. Lucas, July 26; crew and passengers all saved.

BRIGS.

Oxford, Pictou for Boston, was run ashore to prevent her sinking, having struck E. Rocks, Cape Caneo, Sept. 21.
Amos Lawrence, Washington, N. C., for Boston, got ashore on Chatham bars, Sept. 25.
John M. Clayton, Bridgeport, C. B., for Philadelphia, struck on Lewis' Breakwater 23d Sept., when falling off she sank.
Tarquina, Honolulu for San Francisco, put back leaking badly, July 17.
Commodore Stewart, went ashore, Oct. 3, at Cape Henlopen.
Empire, Savannah for New-York, broke main-gaff, fore-boom, &c., in a heavy gale, Sept. 23.
O. S. Livermore, Eastport for Baltimore, lost mainmast, &c., hull much damaged, in a heavy gale, Oct. 1.
Torcello, (herm.) went ashore at Tanner's Neck, 5 miles W. of Quogue, L. I., during a thick fog, Oct. 2.
Annawan, Caribbean Sea for Havana, arrived at latter port, in distress, Sept. 16.
Gov. Brock, Philadelphia for Portland, put back Sept. 14.
Montague Doyle, Wareham for Jacksonville, wrecked on St. John's bar, Sept. 30.
Hanover, (Dutch) Port au Prince for Hamburg, lost at Atwood's Cay, Sept.
Unknown, about 200 tons, found abandoned and water-logged, Sept. 16.
Malcolm Parkham, Antigua for London, sprunk a leak and sunk, Sept. 2, all hands saved.
Laura, Philadelphia for Boston, sunk off Shag Rock, all hands saved, Oct. 5.
Montague, Wareham for St. John, Fla., went ashore at St. John bar, previous to Sept. 30.
Sir John Harvey, Sidney, N. S. W., for London, put back, June 20, leaking badly.
Clarendon, Valparaiso for Isle of France, put into Sidney, N. S. W., in distress, June 21.
John Guttenburg, drifted ashore on Lighthouse Point, Cuttyhunk, total loss, Oct. 4.
Tyrant, Georgetown, S. C., for Baltimore, put into Charleston, Sept. 29, leaky.
Indus, was run into by unknown vessel, while at anchor off Bedlow's Island, lost flying-jib, &c., Oct. 10.
Latigo, (Sp.) Charleston for Barcelona, capsized, Oct. 3, in a squall, between Majorca and Port Mahon, Captain and two men drowned.
Roseneath, at San Francisco, had decks swept, &c., lost one man, in a heavy gale.
Unknown, (herm.) about 200 tons, was seen, Sept. 23, 40 miles S. E. of Cape Henry, water-logged and abandoned.
Wm. Penn, struck upon a coral reef off Conrea, total loss, captain and crew saved.
Glide, Glasgow for Halifax, struck on Muine Island and sunk, all hands supposed lost.
Banner, in a heavy gale, became water-logged, and sunk off Point Albine, L. E., Oct. 6.
Hartley, Quebec for Sunderland, in contact with unknown ship, had starboard quarter stove in.
Unknown, was seen, Sept. 22, lat. 43 16, lon. 52, dismasted and abandoned.
Arion, (Br.) Shanghae for Sidney, C. B., was fallen in with, June 5, in a sinking condition, with loss of mainmast.

SCHOONERS.

Jane Ingraham, Charleston for Alexandria, D. C., put into Wilmington, N. C., leaking badly, Sept. 17.
Ashland, Boston for Wilmington, N. C., went ashore, Sept. 20, on New Inlet Bar, totally lost.
Unknown, run ashore on Chatham Bar, Sept. 20.
William, —— for Boston, went ashore on Brown's Island, totally lost.
R. H. Huntley, Baltimore for New-York, put back in distress.
A. Pharo, Philadelphia for Providence, in a heavy gale, split flying-jib, &c., Sept. 18.
Princeton, (fishing) was wrecked on "Chegogin," N. S., Sept. 17.

Daniel Webster, Lubec for New York, in collision with unknown steamboat, lost bowsprit, &c., Sept. 19.
Unknown, went ashore capsized, on Absecom bar, Sept. 20.
Wm. Mason, New-York for Franklin, Lou., was run into by barque C. Windsor, damaged sails, &c., Oct. 3.
Effort, Charleston for Philadelphia, lost fore-sail and main-gaff in a heavy gale, Sept. 19.
Columbus, Absecom Inlet for ——, sprung a leak, and sunk, Oct. 3, when 10 miles S. of the Inlet, total loss.
Cataract, New-York for Charleston, ashore on Chickemacomic beach, Sept. 23.
E. C. Felter, Honduras for New-York, put into Baltimore, in distress.
Wild Pigeon, New-Orleans for St. Mark's, Fla., lost jib, main-topmast, &c., in a gale, Sept. 17.
William Franklin, of Marblehead, put into Halifax, leaking badly.
Marietta Burr, Alexandria for Boston, put into St. Dennis, Sept. 28, crew sick with yellow fever.
John L. Darling, Philadelphia for Boston, put into Holmes' Hole, Sept. 29, in distress.
Rhode Island, from Middle Creek, Hyde Co., put into Washington, N. C., leaking badly, Oct. 3.
R. G. Porter, Boston for Philadelphia, lost bow-sprit, &c., in collision with unknown vessel, Oct. 4.
George Darley, James River for Maine, went ashore at Moriches, prior to Oct. 1.
John T. Fardy, New-Orleans for Baltimore, put into Key West, Sept. 26, in distress.
Unknown, ashore off Cape Cod, prior to Sept. 27.
Relief, Washington for Wilmot, went ashore at Gulliver's Hole, Sept. 28, totally lost, crew saved.
Unknown, was seen ashore, off Thomas' Point, Sept. 19.
Washington, St. John, N. B., for Boston, got ashore, Sept. 19, on George's Island, came off leaky.
Unknown, ashore about 7 miles to eastward of Atlantic City, Sept. 18.
Arbuckle, came in collision with brig Mechanic, had her head-gear carried away, bulwarks and stanchions stove, &c.
Rainbow, came in collision with sch. J. E. Davis.
Belle, of Oyster Bay, run into by unknown schr., lost head-works and head-gear, Sept. 23.
J. J. Taylor, Chassawiska for New-York, arrived at latter port, Sept. 2, leaking badly.
Alva, St. John, N. B., for Baltimore, put back Oct. 7, having been in contact with brig May, much injured.
H. L. Scranton, Boston for Brazos Santiago, ashore 25 miles S. of mouth of Rio Grande, Sept. 15, total loss.
Unknown, about 200 tons, with bowsprit gone, passed North Chatham, steering S., Oct. 5.
Deer Island, wrecked at Biloxi, Sept.
New London, (sloop) of New London, was found abandoned, and leaking badly, 40 miles N. E. Cape Cod Light.
Erie, wrecked at Bone Bay, Straits of Belle Isle, crew saved.
Unknown, ashore on George's Island, below Boston, Oct. 9.
Mary E. Hoover, New-York for Georgetown, S. C., wrecked on Georgetown Bar, Oct. 8, cargo safely landed.
Iranhoe, Cleveland for Mackinaw, was run into and sunk, Oct. 5.
G. B. Sloat, at Charleston from Philadelphia, lost main-boom, &c., prior to Oct. 10.
Raffir, (Br.) of Dumfries, wrecked at N. W. point of Inagua, Sept. 8, crew saved.
James Stockton, New-Orleans for Mobile, totally wrecked near Shieldsboro', L. Ponchartrain.
Gipsey, (Br.) Boston for St. Andrews, went ashore, near Frost's Point, Rye, Sept. 22d.
Elizabeth and Eleanor, (herm.) at New-York from Boston, in contact with an unknown brig, lost jib, &c., Sept. 28.
Puritan, sprung aleak, and put into Detroit to repair.
Adda, from Milwaukee, sprung aleak and damaged two or three hundred bushels of her wheat.
Herald, (Br.) Newburyport for Labrador, was totally lost in Equimaux Bay, during a gale, Aug. 26.
Ann, Bangor for Biddeford, lost both masts and bowsprit, in contact with unknown sch., Sept. 7.
Patrick Henry, Toledo for Oswego, put into Cleveland, leaky.
Republic, Milwaukee for Buffalo, lost bowsprit, bobstays, &c., in collision with sch. Racine.
Charlotte, of Sheboygan, ashore near Two Rivers, Oct. 3.
T. Wyman, ashore at Pt. Aux Barques, prior to Oct. 8.
Unknown, (sloop) 50 tons, was fallen in with off Owl's Head, on her beam-ends, and abandoned.
Edward, Eastport for Philadelphia, got ashore near Barnegat Inlet, Oct. 15, probably prove a total loss.
Humming Bird, Charleston for New-York, put into Wilmington, leaking badly.
Mary D. Lane, New-Orleans for New-York, returned to S. W. Pass, leaky, Oct. 7.
Maine Law, Savannah for Portland, put into Holmes' Hole, leaking badly, Oct. 16.
Mary Lisperance, went ashore on Lislet Reef, Oct. 16.
Edward Lind, Trinidad for Portland, wrecked on the Jordinalles reef, total loss, Sept. 24.
Mary Jones, (fishing) of Gloucester, lost on the bar at St. Peter's, P. E. I.
Regulator, Frankfort for Dighton, put into Holmes' Hole, leaky, Oct. 14.
Maria Jane, Eastport for Alexandria, put into New-Bedford, leaky, Oct. 15.
Spencer, Muskegan for Chicago, Ill., totally wrecked at the former place, Oct. 5.
E. C. Smith, of Provincetown, was seen on the Grand Banks, with loss of sails and rigging.

Art. XXV.—LAUNCHES.

At Brunswick, Me., Sept. 24, by Mr. Joseph L. Given. a ship, 1,300 tons.
At Freeport, Sept. 26, by Master Rufus Soule, ship Time, 700 tons, for the freighting business.
At Yarmouth, Sept. 25, by A. & J. Seabury, ship Detroit, about 1,200 tons.
At Brunswick, Me., Sept. 28, by Messrs. Pennell & Bro., ship Chas. S. Pennell, about 1,050 tons.
At Brunswick, Me., ship Rising Sun, about 1,300 tons, by Geo. Skolfield.
At Big Sodus, N. J., sch. R. R. Lumnis, by D. Rogers, her keel 109 ft., beam 23 ft. 6 in., and hold 9 ft. 4 in.
At Frankfort, Me., Sept. 28, ship Addison Gilbert, by Messrs. Arey & Williams.
At Portsmouth, ship S. C. Thwing, 1,300 tons, by Mr. Badger, for the freighting business.
At Richmond, Me, Sept. 26, a fine ship, 1,100 tons, by Thos. Spear.
At Searsport, Sept. 25, barque Talavera, 450 tons, by Wm. McGilvery.
At Frankfort, Sept. 25, ship Robert Treat. 724 tons.
At Chicago, Aug. 9, by Messrs. Peck & Masters, sch. David Tod.
At Port Oshaw, L. Ontario, by Messrs. Farwell, brig Allies, three-masted, keel 130 ft., beam 6½ ft., depth of hold 11½.
At Chicago, by Luther Moses, propeller D. U. Bradbury, keel 175 ft., beam 27 ft., depth of hold 12 ft., about 540 tons.
At Newburyport, Oct. 8, ship Daring, owned in Boston, built by Geo. W. Jackman.
At New-York, barque Maury, by Rosevelt, Joyce & Co.
At Kennebunckport, Sept. 25, by D. & S. Ward, ship Riversmith, 900 tons.
At Kennebunckport, Sept. 22, by D. & S. Ward, barque Hesper, 639 tons.
At Frankfort, Me., Sept. 26, by Williams & Arey, ship Race Point, 850 tons.
At Thomaston, recently, by Waterman & Oliver, barque Mary Bently, 400 tons.
At Essex, Mass., Oct. 11, barque Addison Child, 400 tons, for freighting business.
At Mystic, Conn., recently, brig North, N. Y. & Galveston trade.
At Chelsea, Oct. 2, ship Cicero, 1,100 tons, for freighting business.
At Woolwich, Me., Oct. 11, ship Clara L. Preble, 800 tons.
At Portsmouth, N. H., Oct. 15, ship Isaac H Boardman, 1,500 tons, 3 decks.
At New-York, by W. H. Webb, Oct. 15, a propeller, 500 tons.
At Bath, Oct. 10, barque Ann E. Hooper, 1,100 tons, for freighting business.
At Belfast, Oct. 12, barque John Howe, 350 tons.
At Newburyport, Oct. 10, ship George West, 1,100 tons.
At Sippican, Oct. 10, a tern sch., 350 tons, for parties in New-York.
At Rockport, Me., Sept. 26, brig Belle, 300 tons,
At Medford, Mass., Oct. 10, ship Pleiades, 630 tons.
At Richmond, Sept. 26, by Thomas Spear, Jr., a ship of 1,100 tons.
At Portsmouth, N. H., Sept. 28, ship S. C. Thwing.
At Davenport, Oct. 11, by Isaac Story, sch. Fleetwood, 230 tons.
At Boston, Oct. 12, by E. & H. O. Briggs, ship Fair Wind, 1,300 tons.
At New-London, Conn., Oct. 1, by Samuel Moxely, Jr., barque Samuel Moxely, Jr., 430 tons.
At Noble's Island, Portsmouth, N. H., sch. W. Freeman, 135 tons, built by Arad Tibbetts.
At Brunswick, Sept. 12, a ship, about 1,300 tons.
At Belfast, by Messrs. Carter, ship Mary Hammond, 1,000 tons.
At Newburyport, by Messrs. Currier & Townsend, ship Gallego, 600 tons.
At Sullivan, Me., by Messrs. A. B. & A. Simpson, sch. Wakeag, 160 tons.
At Sippican, by John Delano, a sch., three-master, not named yet.
At Beverly, by Mr. R. J. Pickett, barque Susan Clark, about 300 tons.
At Greenpoint, L. I., by Silas C. Hand, sch. Chas. B. Knudson, 290 tons.

Correspondents will please bear with us; we are compelled to lay over two articles for next month which we had intended for this number—one Historical, the other Statistical.—Ed.

ICONOGRAPHIC CATALOGUE OF THE U. S. NAVAL LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

Part I.

HISTORY AND ARCHÆOLOGY.

SECTION I.

HISTORY.

THE term Iconographic, has been chosen as the most expressive and appropriate, though it may be styled a "terrible jaw-breaker," and may make "an ordinary seaman guess at its meaning." A seaman who takes our Catalogue in hand, and fails to guess what the title means, will be at least *extra*-ordinary. The magnificent Iconographic Encyclopædia of Heck, translated by Baird, has familiarized the term to a wide circle of landsmen. The work will explain its title to any intelligent reader, and, we trust, commend the choice of it to the delicate ear of the friendly critic.

"The love of history seems inseparable from human nature, because it seems inseparable from self-love. The same principle, in this instance, carries us forward and backward to future and to past ages. We imagine that things which affect us, must affect posterity—this sentiment runs through mankind, from Cæsar down to the parish-clerk in *Pope's* Miscellany."—*Bolingbroke on History.*

Annual History of Europe. 5 vols. 1702 to 1709.

Alison, Archibald. History of Europe from the Commencement of the French Revolution in 1789 to the Restoration of the Bourbons in 1815 4 vols.

Bancroft, George. History of the United States. 6 vols.

Bissett. History of England under the reign of George III., to which is prefixed a View of the Progressive Improvement of England, brought down to the death of the king. 3 vols.

Botta, Charles. History of the War of the Independence of the United States of America. Translated by George A. Otis, Esq. 2 vols.

Brenton, E. P., Captain in the Royal Navy. The Naval History of Great Britain, from 1833 to 1836. Illustrated with Portraits, Plans, &c. 2 vols.

Bolingbroke. Letters on English History.

Burnet, Gilbert, Bishop of Salisbury. History of his own times, from the restoration of Charles II. to the settlement of King William and Queen Mary. 2 vols.

Butler, F. History of the U. S. of America, embracing the whole period from the discovery down to the year 1820. 3 vols.

Burchett. Naval History, from the earliest accounts of time to the conclusion of the last war with France, 1720.

Borlases. History of the Irish Rebellion, traced from many preceding Acts to the Grand Eruption, 23d October, 1641.

Charnock. History of Marine Architecture, with a view of the Nautical Regulations and Naval History of all Nations, 1801. 3 vols.

Clarendon, Hyde, Earl. History of the Civil Wars in England, to which is added an Historical View of the Affairs of Ireland. 6 vols.

Crowe, Eyre Evans. History of France. 3 vols.

Coote, Charles. History of the Church, Ancient and Modern, continued to 1826. 2 vols.

Coxe, William. Histoire De La Maison D'Autriche. 5 vols.

Campbell, Dr. J. History of the lives of the British Admirals, containing a new and accurate Naval History from the earliest periods, and continued down to 1799. 4 vols.

De Sismondi. History of the Italian Republics, being a view of the rise, progress and fall of Italian Freedom.

Dwight, Jr., Theodore. History of Connecticut, from its first settlement to the present time, 1841.

Du Pau. History of the Destruction of the Helvetic Union and Liberty.

Edwards. Civil and Commercial History of the British Colonies in the West Indies, to which is added an Historical Survey of the French Colony in the Island of San Domingo.

Ferguson, Adam. History of Rome, its Progress and the Termination of the Republic.

Frazer, J. B. History of Persia, from the earliest ages to the present time, 1841.

Fletcher, J. History of Poland, from the earliest period to the present time, with a narrative of recent events, obtained from a Polish Patriot Nobleman, 1833.

Green, N. History of Italy, translated from the original Italian.

Gillies. History of Greece, its Colonies and Conquests, from the earliest accounts till the division of the Macedonian Empire in the East. 4 vols.

Gibbon. History of the Decline and Fall of the Roman Empire, with Notes by the Rev. H. H. Milman. 8 vols.

Grahame, James. History of the Rise and Progress of the United States of North America till the British Revolution in 1688. 2 vols.

Gleig, Rev. G. R. History of the Bible. 2 vols.

Hallam, Hy. History of the State of Europe during the Middle Ages. 2 vols.

Hale. History of the United States from the first settlement as Colonies to the close of Mr. Madison's Administration. 2 vols.

—— History of South Carolina, embracing many valuable documents relating thereunto, from its First Discovery to its Independence.

—— History of New-Hampshire, comprehending the Events of one complete Century, also Geographical Description of the State, &c., &c.

—— History of the Colony of Nova Cæsania, or New-Jersey: containing an Account of its First Settlement, Progressive Improvement, Constitution, &c., to the year 1721.

—— Historical Collections of the New-Jersey Historical Society. 4 vols.

—— History of Rome, Library of Useful Knowledge.

—— History of Spain and Portugal, from B. C. 1000 to A. D. 1814.

—— History of China and its Inhabitants, from the Embassy of Marcus Antoninus. 2 vols.

—— Historia General De Las Islas De Canaria. 4 vols.

—— History of the French Revolution, from its commencement to the Death of the Queen, and the Execution of the Deputies of the Gironde Party. 2 vols. in 1.

Hale. History of the British Expedition to Egypt.
—— History of Pompeii. 2 vols.
—— History of Arabia, Ancient and Modern. 2 vols.
—— History of Don Francisco de Miranda's Attempt to Effect a Revolution in South America.
—— History of Louisiana, containing a Description of the countries that lie on both sides of the River Mississippi. 2 vols.
—— History of Spain and Portugal, from the First Settlement by the Iberians and Celts, conquest of the Romans, under the Goths, under the Arabs and the Moors. 5 vols.
—— Precis Historique de la Marine Francaise son organisation et des Lois. 2 vols.
Hume. History of England. 3 vols.
Hordynski, Joseph. History of the late Polish Revolution and the Events of the Campaign.
Howe, Samuel G. Historical Sketch of the Greek Revolution.
James. History of Charlemagne.
James. History of the Chivalry and the Crusaders.
James, Col. St. Thomas. History of the Herculean Straits, now called the Straits of Gibraltar; including the Ports of Spain and Barbary, that lie contiguous thereto. 2 vols.
Josephus. History of the Jews. Folio, Translated by Maynard.
Josephus. History of the Jews. Folio, *Black Letter.*
Josephus. History of the Wars of the Jews. Translated by William Whiston.
Jal, A. Archæologie Navale. 2 vols.
Keightley. History of England, from the Earliest Period to 1839.
Knickerbocker, Diedrich. (Irving.) History of New-York City. 2 vols.
Leland, Thomas. Histoire D'Ireland depuis l'invasion D'Henri II.
Lingard. History of England, from the First Invasion of the Romans to the Reign of James II. 8 vols.
Livius Titus. History of Rome. Translated, with Notes and Illustrations. 6 vols.
Macaulay. History of England, from the Accession of James II. 2 vols.
Marshall, J. History of the Colonies planted by the English on the Continent of North America, from their Settlement to the Commencement of that War, which terminated in their Independence.
Mitford. History of Greece, from the Earliest Accounts to the Death of Alexander. 8 vols.
Molina, Abbe Don J. Ignatius. History of Chili, Civil, Natural, and Geographical.
Mengin, M. Felix. Histoire De L'Egypte, sous le Gouvernment De Mohammed Aly ou Recit des Evinemens. 2 vols.
Murray. History of British America.
Murray. History of British India, from the Remotest Period to the Present Time. 1832. 3 vols.
Milman. History of the Jews, from the Earliest Period to the Present Time, 1833. 3 vols.
Morgan, Hon. C., Secretary of State of the State of New-York. Documentary History of New-York. 4 vols.
Morse. History of the American Revolution, and the Cause and Events which produced, and terminated in the Establishment and Independence of the American Republic.

Napier, W. F. P. History of the War in the Peninsula, and in the South of France, to which is prefixed Observations, illustrating Sir J. Moore's Campaigns. 6 vols.
Prescott. History of the Conquest of Peru, with a Preliminary View of the Civilization of the Incas. 2 vols.
Prescott. History of the Conquest of Mexico, with a Preliminary View of Ancient Mexican Civilization, and the Life of the Conqueror, Hernando Cortez. 3 vols.
Prescott. History of the Reign of Ferdinand, and Isabella the Catholic. 3 vols.
Plowden, F. History of Ireland, from its Union with Great Britain in Jan., 1801, to Oct., 1810. 3 vols.
Raleigh, Sir Walter, Knight. History of the World.
Rollin, Charles. Ancient History of the Egyptians, Carthaginians, Assyrians, Babylonians, Medes and Persians, Macedonians, and Grecians. 8 vols.
Robertson, Wm., D. D. History of the Reign of the Emperor Charles V. with a View of the Progress of Society, from the Subversion of the Roman Empire to the beginning of the 16th Century.
Robertson, Wm. History of the Discovery and Settlement of America, with an Account of his Life and Writings. 3 vols.
Robertson, Wm. History of America, in which is included the Posthumous Volume, containing the History of Virginia and New-England. 4 vols.
Russell, M., LL.D. History of Palestine or the Holy Land, from the Earliest Period.
Russell, M., LL.D. History of Egypt, Ancient and Modern, with an Outline of its Natural History.
Russell, M., LL.D. History of the Ottoman Empire, from its Establishment till the year 1828. 2 vols.
Russell, Wm., LL.D. History of Modern Europe, witha View of the Progress of Society, from the Rise of the Modern Kingdoms to the Peace of Paris, 1763. 3 vols.
Russell, Wm. History of Modern Europe, with an Account of the Decline and Fall of the Roman Empire, and a View of the Rise of the Modern Kingdoms, to the Peace of Paris, 1763. 6 vols.
Russell. History of Ancient Europe, with a View of the Revolutions in Asia and Africa, in a Series of Letters.
Russell. History of the Barbary States.
Ramsay, David, M. D. History of South Carolina, from its First Settlement, in 1670, to the year 1808. 2 vols.
Ramsay. Universal History, Americanized from the Earliest Records, to the year 1808, with a Particular Reference to the United States of America.
Ramsay, A. C. History of the War between Mexico and the United States. Written in Mexico. Translated from the Spanish.
Richards, R. History of India, or Facts submitted, to Illustrate the Character and Condition of the Native Inhabitants.
Recherches Historiques et Politiques sur Les Etats Unis de L'Amerique Septentrionale, par un Citoyen Virginie. 4 vols.
Smollett. History of England, from the Revolution, 1688, to the Death of George II.

Smollett. History of England, from the Descent of Julius Cæsar to the Treaty of Aix la Chapelle, 1748.
Steinmitz, F. History of the Ship, its Origin and Progress, from its First Invention to the Latest Improvements.
Thompson, B. F. History of Long-Island, from the Discovery and Settlement to the Present Time, with many Important and Interesting Matters. 1843. 2 vols.
Taylor, W. C. History of Ireland, from the Anglo-Norman Invasion to the Union with Great Britain, with additions by Wm. Sampson. 2 vols.
Tytler. Universal History. 6 vols.
Thiers. History of the French Revolution, with Notes and Illustrations, by F. Shoberl. 4 vols. in 2.
Venetian History, from the Settlement of the Venetie to 1798. 2 vols.
Vertot. History of the Revolution in Sweden.
Willard, E. History of the United States, or Republic of America; Exhibited in Connection with its Chronology and Progressive Geography.
Waddington, Rev. George. History of the Church, from the Earliest Ages to the Reformation. 2 vols.

SECTION II.

ARCHÆOLOGY.

The student of History, and the Archæologist, will find an ample field offered them in the resources for the indulgence of their favorite pursuits, which the Museum and Library of the Lyceum proffer for their free avail and benefit. Rare and varied are the objects of interest in the department of Antiquities, and the contemporary habits of distant Peoples. By slow accessions, almost imperceptible, yet as if by a spontaneous confluence, to this centre of national interest, the different expeditions, private and public, from our own to foreign shores, have gathered mementos of their travel, and presented them to this cabinet, for the instruction and admiration of personal friends and the public at large. The hand of individual benevolence and generous spirit has not been inactive, in garnering and transporting hither the remembrancers of its multifarious and world-wide explorations. The sailor has vied with the officer, the landsman with the seaman, perhaps not coping equally, but all in the self-same spirit, till the accumulated results reflect no discredit on the patriotism, enterprise, and forethought, which brought these manifold remains to this depository, into the compass of one collection.

It is a spirit of patriotism that whispers to the bosom of the adventurous navigator, "The relic I see, the wild costume, the savage weapons, would confer pleasure or actual instruction on my countrymen," were they placed availably before their eyes, for inspection and study. It may cost time, labor, stowage room. Its purchase, or obtainment, may involve an outlay of money and of personal effort, that I can ill afford, yet if the present opportunity is allowed to pass unimproved, no other may offer as favorable, and the loss of this falls undividedly on my head, in the forfeiture of public welfare, which the want of such an article may occasion. No! the time must

not be lost, the curious relic must be obtained, for AMERICA expects every man to do his duty, particularly where the duty is one which no one else can ever again replace, if neglected. The patriotic spirit, too, is kindled by the reminiscences of battle-fields, marked in the Revolutionary struggle. These are well adapted to impart the spirit of a conquest, honorable, while bloodless, in behalf of the land, that has given its denizens such privileges to enjoy, as attend the condition of the great majority among our population. Patriotism dictates the repayment of these deep obligations. It is for nothing else that these specimens were gathered but for our country ; for this alone, that they are placed in the openest view of all that choose to visit them.

Enterprise was requisite, alike to precede, direct, and follow the noble impulses of patriotism. The former it is, which leaves the well-furnished fireside, the genial home, the social group, for the antipodes, at a moment's warning, for any purpose worthy of a rationality like man's, and is never wearied of prosecuting its movements till the chosen prize, the tempting inducements, are securely won, or demonstrated to be utterly hopeless. It is this, which chases its game, now as the whale, along the coasts of Greenland, and among the sharks of the tropics. The varieties of climate, and vicissitudes of human experience, vainly combine to deter our traveller from the course he has appointed.

In combination with patriotism and enterprise, prudent forethought is required, in order to arrange the security and transportation of many articles, too frail in their nature to admit of easy carriage, or too cumbrous for easy facility of movement. How to bring delicate vessels of earthen-ware from Pompeii, or glazed pottery from Thebes ; how to pack the war-clubs, and women's dresses, from the South Sea Islands, in the best manner, implies an amount of contrivance which, if not surprising, is to the credit of those instrumental in this symbolic union of all the climes and nations of the world.

From whatever motives, personal or generous, the collection has grown, till it composes a well-known place of resort, an attractive centre, where beauty and valor, where learning and wit, where labor and skill, meet, a passing hour, examine the storied urn, the glowing canvas, the links of freedom's guardian chain, the treasures of the deep sea, and the volcano, the remnants of antiquity, in the defaced but majestic sculpture, and the gift of yesterday from the returned, long-lost adventurers, who are hailed by the unanimous applause of the civilized world, for their victory over the rigors of the circum-polar cold. The eye of the midshipman dilates, and enkindles with just enthusiasm, as he glances from the trophies won to those he has yet to win, and signalize his name. The veteran, from the battle-field or man-o'-war's deck, as he surveys the historic and antique fragments around, has his youth recalled, and proudly points them out to the stripling

at his side. A tender mother is inspired by the sight of the exhumed wonders of Egypt and Pompeii, the immortal architecture of Greece, the emblems of affection, of home, that charm all ages, in their every form, with a deeper sense of the value that belongs to the maternal relation, the necessity of an honored life, ere we are as dust in the grave, and, as she describes to the family what she has seen, imprints on the minds of the affectionate listeners lessons of wider and nobler import, for their after life to copy. The holiday of the schoolboy, a leisure hour of the young man, can, perhaps, nowhere find grouped together so many sources of eager stimulus to thought, and such copious store of material to remember, to converse of, and describe, in one place, of the same nature, as this Museum affords.

But the pleasure of observing the impressions which visitors severally receive, according to circumstances, is less appropriate for detail here, than such an iconographic sketch of the archæological remains, as may lead to the enjoyment of that pleasure by the reader of these pages, if called, by any reason, to visit the metropolis, or its vicinity.

The design of this survey is rather that of description than that of bald statistics. The description, it is intended, shall be limited by the wants of general readers, some unable to visit these antiquities, rather than by the tastes of the practised antiquarian; shall be adapted for family reading, rather than for an Oriental Society; with the aim of giving a true idea of this department of the collection, and calling due attention to its most attractive points.

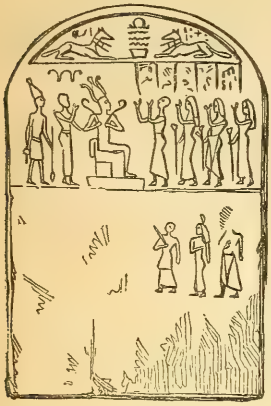
What has been already placed on its shelves? What nations, what ages, are represented there?

Imagination need not be challenged in the enumeration. The earlier and the latest nations have joined the products of their arts. All stages of civilization are presented. Egypt and China, with Hindostan, as the realms of mysterious Eld, meet face to face with Greenland; Hawaii, Central America and Africa, contribute of their illustrative means to the weapons, tools, and dresses, of many a sea-girt isle. The pyramid and temple, built thousands of years ago, the lachrymals of Southern Europe, and coins of ancient empires, confront the toils, and expressively, though silently, commend the improvements of the present day, in the busy yard without, as it represents the naval power of the greatest confederacy of States known to the history of the world. How marked the contrast, to see, as with one glance of the eye, what was done by the artizans of the Pharaohs, and what is doing by the architect and builders of the Niagara!

The circumstances under which the catalogue of this department was commenced, the degree of attention to which each article, and each group of articles, is justly entitled, forbade the preparation of a minute list, before making a selection, and adjusting completely the conflicting claims of those objects which are of minor importance to the general reader; all these have

concurred in leading to the proposed course, viz.: the choice of a few articles of obvious interest to all, for description, leaving much of perhaps equal interest, together with a more detailed catalogue of the antiquities, to be given hereafter.

The articles which have been thus chosen are the following:—An Egyptian Tombstone, a Grecian sculpture, a Temple fragment, a Figure from Pæstum, some Tear-Bottles from Pompeii, and a Bacchanal Figure.



1. An Egyptian Tombstone. This was dug up at Thebes, and is probably from three to four thousand years of age. It was presented to the Lyceum in 1838, five years after the latter was organized. Its height is about two feet six inches, its breadth one foot eight inches. Its sculptured portion is about half its length, except in the continuance of the Procession below the chief line of figures. The central and principal figure is in a sitting posture, on a seat or throne, of rectangular outline, and, apparently, very uncomfortable, from its flat, hard surface. Over its back hangs a robe, of more flowing outline, forming an agreeable contrast with the general angularity. On his head is a conical cap, inclining backward, and enclosed in another, projecting more widely, the symbol of regal or divine authority. He bears in his hand a falchion, and (flagellum) scourge. A procession is approaching him, of figures wearing helmets, each diverse in some respect from the rest, as the engraving shows. I cannot decide the import of the figures or the hieroglyphics. The stone is unique. From the examination which I have given it, in comparison with the figures presented in the (abridged) edition of Sir J. Gardner Wilkinson, the works of Rev. Dr. Hawks, and John Kenrick, M. A., with Rev. T. D. Fosbroke's Encyclopedia of Antiquities; particularly of Wilkinson, (Vol. II., p. 325,) I am led to consider the sitting personage the king of Upper Egypt. Whether the projections suffice to identify it with the united crown (*Pshent*) of the upper and lower country, needs further inquiry. The helmet, of woollen stuff, with a thick nap, is worn by part of the company advancing to salute him. The attitude of the hands is suppliant, deprecating his displeasure. The weapons and implements they bear seem those of subjects. It would be the immediate conjecture of any one examining the figures that stand behind his *dais*, that they must serve as the retainers of his royal pageantry, the officers of his court, and instruments of his sovereign power.

To decipher the meaning of the hieroglyphics between and above the members of this picturesque group, might afford pleasure to the expert archæologist, and profit to the unlettered reader, but has been deferred, that by additional comparisons and inquiry, a satisfactory solution might be at-

tained, and submitted for verification to the mature consideration and decision of the best Orientalist. It is the all-absorbing gulf of to-day, with its duty and responsibility, that entombs even the exhumed relics of Ancient History, with scarce an exception, not lingering with a labor of love, to re-cut and brighten the fading lines of the departed. If a nation die shall its epitaph be read again? The disciples of Young and Champollion, of Wilkinson and Abbott, are rare among us, for "commerce is king." It is ours, mostly, to make history, rather than read it. Those who wish to pursue the latest speculations and discoveries concerning Egypt, are referred to the list of works presented under the word Egypt, in Poole's Index to Periodical Literature, (pp. 144, 5.)

Almost enchanted is the scenery, and miraculous the array of facts in the land of Egypt. The superiority of the life after death, to that before; the legislation which maintained such national sentiments through a vast interval of human history; the state of its arts and manufactures, the extent of its conquests, the glory of its religion, and subtle religious philosophy; the costumes, manners, and customs; the colossal structures it reared, that still amaze all beholders, by their very fragments; its magnificent ceremonial for every vicissitude of life or death; the flow of its matchless river, the fields and cities that graced the banks, the lavish outlay of a seemingly boundless wealth, with much greater taste, in some respects, than the world beside, has equalled the cradle of all arts and sciences to the world, from that day since; these are but the fewest words of allusion to the vast and numberless wonders of Egypt. It is not enough to rest content with the vague belief, that these familiar statements concerning Egypt are fact. The person that will but commence investigating this land, and its monuments, finds himself charmed by every successive step, far more extensively than he would imagine. The half cannot be told. The resources of language are wholly inadequate to express the emotions which almost invariably follow these investigations. Egypt had for its images of Deity, and its every operation, a scale of colossal grandeur, that compares well with romances of the Orient. Genii and giants are surpassed by the realities of daily life. All was majesty and marvel.

Egypt! land of wonders! whence came thy mysterious founders? Whence were derived their "wisdom and learning?" Whence the bloodless, generous relations of ruler to subject? Whence the fraternal love which made all ranks noble and equal, as if brethren? Whence their skill in the science of war, the variety and value of their warlike equipments, and domestic arts? How was the stone of three hundred tons weight, borne to the distance of an hundred and thirty miles: an achievement that mocks all modern skill? Sphinx-like, with the pyramids, thine emblem for ages, thy existence is now an enigma, unsoluble until it be known again, in full, only when we pass into that realm, where all shadows vanish, and the true, the real, the beautiful, is ever-during. Welcome the day of revelation.

2. A Grecian Sculpture. This was found near the Temple of Ceres, at Eleusis. The curling locks, the low forehead, the form of the eyeball, the upper lip more full than the under, the prominent bones of the eyebrow, correspond, in this head, more closely to the statues of Hercules, than to any other of the deities described by Fosbroke. (Vol. i., p. 174.) The head alone is here The nose has been mutilated. The cheeks have been roughened. But the godlike form is clearly seen; the outline of the cheek is severely close, yet manly; the expression of the chin conveying the sense of firmness, and symmetrical strength. The perceptive organs predominate. In the form of the hair, not so much curled as waving, and in its peculiar serenity of look, it is not unlike that of Jupiter (Æsculapian). The face wears the expression, also, of deeply fixed sadness, of a serious resolution, as gradual in formation, as permanent in its growth and duration. It is a face that grows in beauty to the eye of the spectator, as he dwells upon it till he parts from it reluctantly, and remembers it with pleasure.

That this is a head of Hercules, is rendered quite probable, from the reported locality of its discovery. Eleusis, in Attica, was the seat of Ceres, and the rites of her worship, the Eleusian mysteries. Of these, the distinction into the greater and less, is said to have been instituted to gratify Hercules. He was not eligible as a stranger; yet he was too powerful to be alienated without hazard. Besides, he had already been their benefactor. to a signal degree. A preliminary order of rites was instituted, to which the young hero was admitted. The offspring, as he was, of Oriental fable, the charm of his myth never was extinguished from the breasts of the susceptible Attics. Hence, this country, if the ceremonial of rigid purification for nine days, followed by sacrifices, prayers, garlands of flowers, and the feet shod with the skin of a victim offered to Jupiter, may be so esteemed. The further rites, of leading the candidate, myrtle-crowned, by night, into a stupendous building; laving the hands in holy water, with injunctions of purity in mind; of hearing and answering certain questions, propounded by the priest; the array of terrors, the ground trembling, the fire flashing forth, or the lightning; the sound of howling, as of all Pandemonium, or the roar of thunder, might well be kept from foreigners, and specially reserved for the natives of Attica. But this will amply suffice to recall the illusions that may occupy the mind of the artist and classicist, in studying this now defaced, but sublime work of a hand that moulded to its Grecian dust, centuries since, whole, still long before the labors of Hercules, in the Zodiac, were first described in the symbols of Chaldean astronomy. Thus do the past and present unite, in the bonds of immutable truth, while error is perpetually doomed to die.

3. A temple fragment. Its *locale* is uncertain. Its dimensions are eleven inches by nine and a half, on the line between the sculpture and the smooth face of the stone. The depth of the sculpture, in some places, is three-quarters of an inch. The figures are those of a horse, his rider, and a dog, on a hunting expedition. Immediately in front of the horse, and almost under his hoofs, is an animal almost twice as large as the dog; that may stand for any wild beast native to that clime, and about the size of a wolf. The attitude is canine. The huntsman has his right hand lifted, at arms length, above and behind his head. He is in the act of hurling a spear. The action of all these is extremely spirited. The robe of the hunter is flying behind, as he spurs toward the thicket, where the wild animal lies crouched, awaiting his attack. There is an inscription on this stone, in Greek capitals, partially obliterated. If correctly distinguished, they bear no relation to the story above, as told by the artist's chisel, but run as follows:—

ATHENAEIE APOLLONIO
TO EIDIO ADELΦIDI MNH

It scarcely admits of a translation as it stands.

The attention of some skillful Hellenist, to complete deciphering of these letters, is earnestly invited. The stone is probably unique. Few such inscriptions on monumental marbles have been brought to this country.

(*b*) (*b*)

(*a*) (*c*)

4. (*a*) A figure from Pœstum. This was dug up by D. T. P., and presented by Com. D. T. Patterson. May we not infer that the explorer was the courteous donor, and therefore award him double honor?

The figure is of earthen, coated with a fine ash, or light coloured, whitish soil. The red of the original figure shows clearly, wherever the thin crust has flaked away, as it crumbles off at a touch. The form is that of a female, as appears from the open bosom. Her head is surmounted with a bell-crowned helmet, or *coiffure*, under which her hair escapes in ringlets. Her right arm is in a horizontal position, supporting a small animal, for sacrifice, or as a pet. Her left arm, from the

elbow, is raised in an upright direction, and sustains a tub-shaped article; that may be a wine-basket (venophorum), or altar-basket, the bearer of which (canephoros) was frequently a virgin. In this basket was placed the round cake, the chaplet of flowers, the sacrificial knife, and sometimes the frankincense. To carry this was highly honorable. The forehead of this figure is perfect; the nose, and lower face have suffered much from the rude hand of Time, but the fine outline of the bust is still the same as when finished by its fabricator. It is a half-length figure, and, in view of the commonness of the material, and the interval since it was made, it constitutes an interesting memorial of Pœstum. The antiquarian and numismatic still contend whether it was Phœnician, Etrascan, or Sybarite, that founded this port. Its majestic piles yet strike the visitor with profound awe, though erected about seven centuries before the Christian era. Masters of the present Gulf of Salermo, they fell, nevertheless, before the Lucani. The united forces of Lucanian and Samnite yielded to Alexander, the Epirote. The Roman power, some three centuries before Christ, conquered Pœstum, and planted there a colony. Like the captive Jews, in Babylon, they held dear the language and usages of their ancestors, and native land. Once a year they met, as Athenæs records, to bewail their woes, while for the day all is Greek again—rites, words, and thoughts, as in their golden age. Its roses bloomed twice a year. Its temples are the finest structures in Italy that have survived the ravages of barbarians, and the wreck of passing ages.

5. (*bb*) Lachrymalia from the Pompeian collection. Quite a large variety of patterns exist of these delicate and elegant vases. The form is singularly graceful, in the easy curvature, the air of lightness, the complete distinction observable, and the resemblance they bear to the well-proportioned wares of some of our Broadway fabrics. "There is nothing new under the sun." It is maintained by Schœfflin, and others, that the vials called lachrymatores or lachrymalia, were not designed to catch the falling tears of the mourner, to be afterwards mingled with his ashes in the urn. This is the use of them which King David describes—"Thou puttest thy tears into thy bottle." Ps. lvi.: 7. The other view contemplates, instead, as their use, to hold the liquid perfumes, that were to moisten the ashes or funeral pile of the departed. And this is the more natural, as well as more consonant with good feeling, than to take the strange precaution of catching tears one by one, as they fall from weeping eyes.

6. (*c*) A grotesque figure of Bacchus, or Silenus, with drunken leer, protuberant breast, abdomen "with fat capon lined," or good wine, or both; concludes our present list. With tipsy jollity, he has a countenance that radiates good-humor. His portly, obese body is a warning to all whose habits conflict with elegance of physical contour.

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EFFICIENCY OF THE NAVY—THE COUNCIL OF FIFTEEN.

THE judgment and discrimination of the Board, by which so many Navy officers were retired and dropped from the active list of the service, are criticised with severity by all the friends of those who have suffered.

It is supposed that the object for which the Board was authorized by law, was to relieve the active list from those whose incompetency or inefficiency was occasioned by mental or physical disqualifications, and whose general character rendered them improper persons to command and to bear the flag abroad to the shores of foreign countries.

It would be remarkable indeed, if a Navy List, formed like our own, from lads of families influential in politics, who drift upward into the higher grades as a matter of course, should not bear the names of at least a few who are utterly disqualified for Consuls at foreign ports, where the State Department has no representatives, and upon whom not unfrequently devolve important diplomatic duties. And then, it should be supposed, that there are those whose constitutions are such, that they have been unable to withstand the fatigues, privations, and singular monotony of many continuous years at sea, without becoming so impaired, mentally and physically, as to unfit them for these high national responsibilities. Nor is the Navy so unlike all other institutions, that officers never become too old for an efficient discharge of the duties of their profession.

The object of the law was, to retire these—not without pay and without honor—but with the same pay that they would receive if retained upon the list unemployed, and subject to be called into active service again whenever they should be wanted; their only hardship, being ineligibility to further promotion.

It was an easy matter to determine who of the aged captains were too far advanced to be considered altogether efficient. Nor was it more difficult to ascertain the unfitness for sea of that class of officers who have so often begged off from orders to sea in consequence of ill health, and who have incurred the suspicion that they were well pleased to receive their pay at home and on leave, but exceedingly unwilling to do their share of work ashore and at sea. But it was a nice point of discrimination to determine whether an officer, known to be unqualified for all duties of his profession, was so far blameable for his incompetency as to justify that his name be stricken from the rolls altogether—a point of great delicacy and painful responsibility.

Yet the Board seems to have made a frolic of it. Never was it supposed that its duties were to be those of a General Court Martial, for the trial of offences against the articles of war. It was taken for granted by the public, that whenever those articles had been violated, commanding officers had brought the offenders to trial and punishment—or, if no trial had taken place, it was supposed to be within the province of the Board to recommend a trial, even at this late day. It would, however, have been more strictly in their line of duty, as conservators of the Navy, to have recommended charges and specifications against those commanding officers who, according to the files of the department, had neglected to enforce wholesome discipline, by passing over the untried offences, or to have set them aside as inefficient in the discharge of duty.

The standard of efficiency which was erected by the Board for the government of its decisions, is nowhere explained: it can only be guessed from results. And according to the best judgment of many who are qualified to decide, from a long and intimate acquaintance with the *personnel* of the Navy, not more than one-half of the members of the Board themselves could have passed the ordeal through which it so ruthlessly dragged others, scathing them at every step. Not entirely without sin, they have cast stones right and left most mercilessly, and the only apology that can be offered in their behalf, is a culpable ignorance of the character of many of the officers.

As we fear not to think fairly and freely upon this subiect, so we do not fear to express frankly and candidly our reflections and conclusions, without favor or affection.

The object contemplated by the law, evidently required, that all officers, whether old or young, whether distinguished for past services or not, who, in the judgment of the Board, should not be considered qualified for all their professional duties, both afloat and ashore, should be set aside. The veterans of the last war with Great Britain now too aged for active service; distinguished scientific officers, who are physically disabled, but whose moral and intellectual efficiency is beyond question; and those whose minds may have become impaired by a long course of continuous sea-service, were to be set

aside—upon an honorable list—to make room for the advancement of younger or more efficient officers. This was right. Nor is there any just reason for complaint on the part of these classes of officers who have been retired upon handsome annuities for these reasons, unless it can be shown that the decisions of the Board are characterized by partiality and favoritism.

It is in the exercise of that measure of discretion, which Congress reposed in the Board to determine, when the incompetency of an officer "has arisen from any cause implying sufficient blame on the part of the officer to justify their recommendation that his name be stricken altogether from the rolls," that it has offended. If an officer was insubordinate, there was a LAW for his dismissal. If he was proved to have been intoxicated, the same authority punished him. If he refused to obey orders of the department at sea, he was of course compelled to resign or be stricken from the rolls without hesitation. If the Navy Register did not exhibit a full share of sea-service for an officer of efficient capabilities, the fault was in the Department's neglect, in former times, to order him to sea-going ships, implying no blame on his own part. If at any time he was incapable of duty from intemperance, or insubordinate in matters of discipline, we must suppose, for the sake of the reputed efficiency of the commanding officers, that his offences were duly noticed.

Congress and the Executive placed all the heaviest responsibility upon the Navy. There let it rest. But it is due to all, that the country should know that "this thing" has been "done in a corner"—that the sessions of the Board were in secret—that no record of its votes are preserved in its report—that the sufferers have been struck in the dark—that juniors have set aside seniors, and are obnoxious to suspicion of having done so to make way for themselves—that some of the most efficient officers have been retired, while others, who are notoriously inefficient, have been retained—that for the same offence, one officer has been honorably retired, another furloughed, and another dropped, exhibiting favoritism—that very many of the retained officers were entirely unknown to members of the Board, and therefore were not canvassed at all—that the testimony was *ex parte*, much of it *hearsay* evidence, and *all* such as would be inadmissible in any court of justice. It should be known, also, that the most distinguished officers, who were members of the Board, were entirely opposed to this course of proceeding under the law—that they protested against it from beginning to end—that they have carefully kept a record of their own votes in each and every case, and do not hesitate to express their disapprobation of the reckless results.

Let the responsibility rest with the Navy itself. According to the spirit and genius of republican justice, neither life or limb, or REPUTATION—which is dearer than either—should be placed in jeopardy a second time for the same offence; and then even the vilest criminal is entitled to the right of confronting his accusers, of meeting them face to face in open court. If the Board assumed the powers of a Court—as it evidently did—who shall say

that the parties accused were not entitled to some of the limited rights of malefactors while under trial for alleged misdemeanors? In this it is clear, that the Board assumed powers not conferred by the Act of Congress. If a Court, its record should have been carefully kept from day to day, and preserved in the archives of the Department for examination and reference by the members of Congress with whom the measure originated. It should have given broad day-light to its deliberations, and courted the strictest scrutiny of its decisions.

Can a majority of the members of that Board lay their hands on their hearts, and, with their eyes uplifted to Heaven, declare, upon their honor, that they have been and are entirely guiltless of the sin for which they have voted to drop brother officers from the Navy List? Have they forgotten the generous and social impulses of youth, the peculiar joys of arriving in a foreign port after a long and boisterous cruise, and of meeting with old friends far away from home? Have they forgotten the social gathering around the mess-table of a Saturday night, when abroad upon the wide ocean, to drink "sweethearts and wives"? And would they now condemn to poverty and disgrace, a brother officer who might have erred accidentally on an occasion like either of these, but who has given the best of evidences that these errors shall occur no more?

Welcome are they to all the comforts which their quiet hours of calm reflection and self-examination may afford—welcome to their speedy promotion and increased emoluments, and to all the "funeral baked meats" to which they have become legal heirs by executing those inferiors whom they happened to dislike and those superiors who happened to stand as obstacles to the gratification of their indecent haste for promotion. Poor, indeed, must be the man who can envy the majority of that Board the honors they may win from their inglorious proceedings. But they should not presume to discourse of HONOR—for no one who has the soul and spirit of a sailor or a soldier, no one who is worthy to wear his country's insignia of confidence, no true gentleman "to the manor born," can review their decisions without, in his heart, reading the majority entirely out of the record-sphere of personal responsibility.

We are the friends and the advocates of temperance, and profess to bear in our daily walks an example of its benefits. The Navy Laws should be strictly enforced against those who violate them by drunkenness—and unless there has been a shameful neglect of duty by commanding officers, they have been enforced.

While we enter no apology for an officer who, from intemperate habits, is not always qualified for the offices of his profession, and would honor the man who should prefer charges against him for dereliction of duty and bring him before a legitimate Naval tribunal, we protest againt this interested and irresponsible authority, which has given a wide and unwritten

construction to the Act of Congress that defined its powers. At a moment when the intemperate Maine Law is becoming so odious with the true friends of sobriety, its most odious principles are applied and enforced in the Navy with all the zeal of wild fanaticism.

The law was a good one. The Board which it created has abused its power; for it has shown itself to have been Buncombe in its purposes, and extra-judicial in its proceedings.

Nor was it contemplated that so many officers would be placed on furlough. It was supposed that those unfit for service would be either placed on leave or dropped altogether—and not consigned to a sort of black list. It is clear, in the law-books, that there is no furlough-pay now fixed by Act of Congress. In 1835, it was enacted that those who were placed on furlough *at their own request*, should receive one-half their leave pay while *so* furloughed. And in 1845, it was enacted that so much of that law as declared that no officer should be placed on furlough but at his own request, be repealed. The provision of law having been repealed, the pay incidental to the provision is repealed as a matter of course. Yet the Act creating the Board, refers to *furlough-pay;* and the presumption is, that notwithstanding there is at present no *legal* pay for that class, it will be declared by an explanatory Act to correspond with the Act of 1835.

It has been asserted in the highest of high public places of this country, that no citizen has a right to an office which he may happen to fill, any longer than the appointing power pleases to permit him to hold it. And so it is. The Legislatures and the people give elective offices, and they may take them away whenever they please to do so. The President makes all appointments in the Executive Department, and may revoke them at will. Indeed, it is expressly stipulated in the commission of a Navy officer, that he shall hold his office during the pleasure of the President for the time being. But as it requires a long course of training in the lower grades of the profession to make an efficient Naval commander, and as inviting persons of education and character to enter it, immemorial usage has established a sort of common law in the service, that persons who should enter it as a profession should be retained and advanced in turn to the higher grades of office, so long as they remained faithful in the discharge of their duties. And it is under this usage or common law, that those who have had a damper thrown over their military aspirations by being retired without a trial, and those who have been dropped altogether without a hearing, complain of unexampled injustice.

Neither the President or Secretary could withhold approval from the report of the Board, as a whole; for it disposed legally and finally of a number of officers notoriously incompetent—but it is known to all that they did not agree with it in very many individual cases. And it is believed they will apply the remedy—so far as the Executive can apply it—by renominations to the Senate.

It has been supposed, by some of the retired on leave and furlough, that the Senate may interpose and refuse to confirm the promotions made according to the recommendation of the Board. Not so. In their case, the Board's work is complete—a finished affair—no confirmation is required under the law. The Senate, in its Executive capacity, has nothing to do with it. Those who, according to the Act, are advanced to rank and rights—without the pay—will not be confirmed as such by the Senate, until "their regular promotion, consequent upon deaths, dismissals or resignations;" except, perhaps, those who may have been advanced in the place of others that have been dropped. Friends of the latter in the Senate may, with propriety, refuse their votes to confirm nominations for the places made vacant by their dismissal; and, for the sake of justice, it is to be hoped they will do so.

It is idle to suppose that Congress can *repeal* the law, and thereby revoke the action of the Board and the proceedings of the Executive. It cannot be done without a collision of the Legislative and Executive branches of the Government—without an undue interference with each other's constitutional prerogatives. Congress may declare that the Navy List shall be so far enlarged as to include those whom the President may please to nominate, those who may have a successful re-hearing before a Committee of Congress, or who may stand a Court Martial and be acquitted—leaving it discretionary with themselves whether they will thus apply for restoration or not. To us it occurs that this remedial step might be taken with propriety.

In conclusion, we cannot but deplore the injurious effect which the work of the Council of Fifteen must have upon the Navy. It were better that the fungus should have remained upon the body than that it should have bled so fatally in the process of removal. Much of that *esprit de corps*, which gave life and tone to the service, and mutual confidence and co-operation among the officers in the discharge of duty, is destroyed, and each is heard to ask the other, "What next?" No one feels secure. The ancient qualifications of a good officer at sea are accounted the demerits of these days, and the best credentials would seem to be those which the applicants for menial service carry about in their pockets, endorsing their servility.

When the victims of the Venitian Council of Ten were consigned for life to the dungeons beyond the Doge's Palace, they crossed the Bridge of Sighs with no greater ignorance of their offences than do many of the dropped officers receive the long, yellow missives, and learn, officially, that they no longer belong to a service which they have ever loved, honored and adorned.

OUR SAILORS AND MARINES.

The published results, consequent upon the deliberations of the Naval Board, so lately assembled at Washington, have startled with a forty-horse-power shake, many a poor fellow who was calmly sleeping in security and peace. Firmly, and with bold hands was the axe laid to the root of the tree; but is it not questionable whether this attempt to regenerate the trunk will be of much ultimate use unless the dead branches and withered shoots are also lopped off? Will the placing of younger men in places of high trust and importance be attended with the success hoped for, unless the material with which they work is also of an improved quality? Or is it expected that the increase of competency in the official corps—if such there is—must be grafted, in part, upon the man, and from the decaying stump, bring forth fruit, sixty and an hundred fold? These are questions which have crossed my mind while looking at the changes made, and they are, also, questions which experience alone can answer with decided truth. Opinion may lift up her voice and prophesy, but time must tell us if they are to be fulfilled. I may be wrong in my conclusions, but certainly it seems to me that other places than our sea-board cities might produce the bone and sinew which should make the naval sailor. The mothers of our forest lands, whose bosoms pillow *men,* as an enthusiastic native poet tells us, might, perhaps, be induced to let their offspring go down to the sea in ships if they had an opportunity for doing so. Years ago, we had heroes from the back woods who fought our guns against Mr. Bull, and, truth to tell, rather astonished that obstinate, but, on the whole, good-natured individual. Could the material we have now do as much? It is not patriotic to say no; but, really, I have my doubts about it, or, rather, I haven't any doubts at all. People must be landsmen before they can be sailors, and why we should not strive to pick these from the country rather than from the wharves and beaches of our sea and towns, I cannot fathom. The Hon. Secretary has done much, and may do more, to free the service of "black sheep;" and an act of Congress guarantees a pay which any seaman may be glad to get. Why is it, then, that our ships are manned with foreigners and the refuse of creation? Can it be that our system is a wrong one; that by going back to old-timed fashions we would get more reliable and better men? Suppose this shipment for the "general service" were but another name for something like impressment. True, men do it with their eyes open, and of their own free-will; but, while he sells himself, there is a hope within Jack's heart that he may make his cruise along the Mediterranean shore, or in Bill's, that he may go to California. While, as it may turn out, Jack spends his three years on the coast of Africa, and Bill, in the East Indies. Now, sailors have their likes and their dislikes, as other human beings, and would it not, in this enlightened age, be well to study them a

bit, especially if we would lose nothing by the operation? Would it not be better to have one cheerful volunteer for any ship or station, than half a dozen surly fellows whose hearts were set on going somewhere else? We never could get men for Africa or China, did you say? O yes, we could, my friends! Every one who has his business in great waters, or who comes in contact with the seaman, knows that he will ship to go to Purgatory if you pay him for it. Besides, old stagers in the navy—good men and true—have their wishes and desires, their favorite ships and favorite officers, and would often volunteer to go when they—the ships or officers—were going with a light heart, which, we are told, is better than "much treasure," a theory, by the way, which I neither deny nor sustain. Then, why not ship a regular crew for every vessel? When a frigate or a brig is wanted for a station, let her officers be ordered and their names published. Let them then be sent to different points—inland as well as sea-board—with orders to recruit men for their ship, and, it will be found that better crews may thus be obtained, and the ratio of foreigners much lessened. The objection is not so much to foreigners *as* foreigners, but to those only who are worthless as seamen, who cannot speak our language, and who, in their moral natures, are little better than "the brutes that perish." The Danes and the northmen, generally, are, without exception, the best sailors and most willing men that we ever get in our navy. The Englishmen, as a class, among the worst, for they are sulk, dogged, and—what one would scarcely expect in John Bull—treacherous.

The system of drafting men for vessels, as it is practised now, is, obviously, an unfair one. For instance: a crew of some 400 and odd men is wanted for a frigate. Now the captain, ordered to command that frigate, is not allowed to *choose* his sailors from the general force collected on board the different receiving vessels, as that would be unjust to those who might come after him; but must take them as they come upon the shipping list. It is chance, then, which gives a good or an indifferent crew to all our vessels; and it may often happen—indeed, has often happened—that a very large proportion of those crews are foreigners.

The writer of this paper was on board a ship not many years ago, when a most palpable instance of the kind occurred. The *best* men were, of course, picked out to hold the most responsible subordinate positions, and he well remembers that in a so called "division" of eight guns—each gun having a captain, *three* captains of the eight *could scarcely speak a word of English!* They who must give their orders and directions to the crew under them, and to whom is entrusted the loading and the pointing of our guns! Would this have occurred if the officers had been permitted to engage their own crew and fit the ship themselves, as they should do? Or, would it have chanced, as it did chance on board that ship, that a man would have been found who could not make his wants known except through an interpreter?

Seamen are, it is said, very scarce, and growing scarcer every day, so that we are obliged to take every sound man who offers himself. Is this so? The government offers wages to the sailor now, and inducements for good conduct, which should and can command the best material. But Jack wants something besides wages. He wants to feel that he is looked upon as something more than a mere machine—that there is a sympathy between himself and those set over him. Elevate his character, then, by a sound system of rewards and punishments; allow him every liberty consistent with good discipline so long as he deserves it; drive out from the service altogether, the black sheep who now disgrace it and spread contamination all around them, and see if other places besides New-York, and Baltimore, and Boston, will not prove prolific nurseries for reliable and first rate men. We want some other and more certain way of detecting these "black sheep." A man may now-a-days, be disgraced and sent on shore, and the next hour almost, go to a rendezvous and ship again; for, with the mere general description that is had of him it is next to an impossibility to detect such rascals. Every means should be resorted to to prevent this thing; then, why not take daguerreotypes of them? From out a frigate's crew of some 500 men, you seldom will find more than six or seven fellows whose conduct and rascality require that they should never be re-shipped; and, surely, it would cost but little time or trouble to take pictures of all such, and send a copy to each Rendezvous. But were the average three times what it is, and the expense and trouble in proportion, they should not have a feather's heft to equalize the scale weighed down by such assurance of detection. "A little leaven leaveneth the whole lump," and one black sheep may ruin a whole flock. Sailors are not low, sensual beasts, but are as susceptible of improvement as other men. I can see an alteration for the better in their moral natures, even since my steps were first turned oceanward. The philanthropist and schoolmaster have been abroad among them, scattering the seeds of moral light and learning on their unploughed hearts, and here and there, a grain has taken root and struggled up into the sunshine of enlightenment. But while gaining character and knowledge, while climbing upward from those dens of obscenity in which he loved too well to revel, the sailor mostly leaves behind him that daring recklessness, that consummate contempt of death which prompted him of old to "hang on by his eyelids" in the wildest gale, or to run out on a jumping, jerking, topsail yard as if it were a smooth extended pavement. Yes, that race is going, going, almost gone! You sometimes come across a fellow yet, who startles you by an unusual feat of fearlessness; but your modern Jack-tar mostly goes aloft, putting out his right hand for himself and his left for Uncle Sam. That this is owing partly, indeed principally, to the change of character, the slow transition from a state of almost brutishness to one of civilization, is not only true but natural. For when a man begins to learn and to appreciate

the value of existence—to find that he can look beyond a grog-shop and a brothel—he grows more cautious of his life, and how he heedlessly exposes it. But yet it would be quite absurd to think that any stage of civilization and enlightenment is incompatible with full activity and boldness, although the luxuries and elegant indulgencies which follow in their train too often lead to sluggishness and enervation. The state of lethargy in which the Navy has been lying for the last ten years or more—the sort of Rip Van Winkle sleep in which those highest in it have indulged—has shed its influence over sailors, too, and helped in no small measure, to cause that want of promptness and of daring here referred to. A wholesome and just discipline is what is wanted; a discipline that shall be firmly carried out towards high and low, and not with guillotinian sharpness fall upon the neck of Jack, and leave the commodorial throat untouched. Slowly, now, the sailor is emerging from the vale of darkness in which he has so long been hid. Gradually the clouds of ignorance are thinning off, and stars of hope shine out to light him on his way. Yet there are those who still would thrust him back into the night and see him groping there forever: the churlish crowd, still clinging to the coat-skirts of the past, and fighting always with the spirit of the age who gives her shining hand to Jack, and points above them to the morning, breaking bright and beautiful upon his life. Let it come on! Let justice reign, and systematic discipline and proper wages be awarded to the sailor, and, believe me, our Navy will not want in vain such hearts and hands as those which struck beside Decatur, or worked the Constitution under Hull.

But if our sailor system wants improving—wants a clipper bow and stern in place of the old sugar-box arrangement with which it has been rolling in the waves of apathy so many years—our sea-soldier, or marine department requires an equal alteration. These are the men to whom the officer must look—has ever looked—for aid, in carrying on the duty of a man-of-war; and these are, now-a-days, the men to whom he often looks in vain. Once, it seems to have been the custom to encourage that feeling of dislike which has become a proverb, as existing between the sailor and marine. But for the credit of civilization be it said, all that has passed away. Then his hatred for the sailor mingled largely with the soldier's willingness to do his duty; now a feeling of fraternity incites him to neglect it. Then, the sails of discipline were bent with carefulness and accurately trimmed; now they hang in tatters from the yards. But, beginning at the fountain-head to remedy this evil, some means should be devised for *officering* the corps with men who have received a military education; this is the true cogniac in the mint-julip of the system. Now-a-days, when death or resignation makes a vacancy, the gentleman who holds the highest hand in the game of influence political, receives an appointment as direct from the President, which is, of course, confirmed unanimously by the senate. No matter if he

never saw a musket. No matter if he knows no more of a soldier's duty than you or I of Heaven. He wears the uniform, and in a little time, can learn the orders for the "manual," which, in his opinion, seems to cover a multitude of sins. But the marine sees instantly the want of knowledge in his officer, and has his Jony Weller laugh within himself. He watches him as, issuing some order, his glance seeks out the sargeant to know if it is right, and has, in short, but little of that true respect for him which competency everywhere commands. This is speaking generally, yet, I am fully sensible that there are officers in service now, than whom no better need be wanted; and that there are others who require a proper training only to become good soldiers. Then, why not have a school for them as well as for the cadets and midshipmen? Why not educate them at West Point, or, if not there, Annapolis? The course of study at the latter place is now, if I am rightly posted up, a thorough military one. The naval aspirant, not caring for, or knowing, probably,

> "What perils do environ
> The man that meddles with cold iron,"

is taught the science of the musket and the field-piece, as well as of the marlingspike and tar-bucket. And it appears to me, that, being purely naval, the young men of the country who are anxious for distinction as marines, might there acquire the art of war, and use the knowledge to the benefitting of their corps.

I will not say that the rank and file of our marine corps is composed entirely of foreigners; but, that the large majority is such, is surely beyond question. The story often told, of the Dutch sentry in our service, who, instead of calling out "all's well!" cried, "*all ish goot; but my mushket ish losh in der varter!*" might prove literally true at any moment. Yet, these are men who, of all others in the Navy, should be reliable Americans. Men who help to board the fence which keeps the untamed sailor in, and to whose care great trusts—even the lives of officers and crews—are necessarily confided. These, then, should be men, firm, intelligent, and honest; but the pennywise pound foolish policy, which seems to be the glory of our government, can gather nothing to the ranks but stupid turf-lumps from the muddy bogs of Ireland, and smoke-dried, beer-soaked villains, swept like vermin from the rottenness of Germany. And yet, how universal would be the shout of execration if we should get well whipped in any ship-to-ship engagement! How would the shell of wrath whiz by the governmental head and burst among the captain and officers! The Hon. gentleman who is making now that "telling speech" against the Navy and its friends—of which he knows so much—who objects to everything that looks like increase or advancement, until, perhaps, his flag has been disgraced and trampled on; and who confidently hands a sow's ear to an officer with,

"make me a silk purse, sir! *He* would be the first to cast a stone, though, Heaven knows, he is not sinless.

But, it is only folly to exclaim when I would gain the ears of those exclaimed against; when I would pull away for them, and others in authority, a portion of the crumbling bricks and mortar that compose our marine and sailor system, and ask them for "their voices, their most sweet voices,' to build it up again upon a better and more liberal foundation.

T OF THE AGE.

TONNAGE LAWS OF GREAT BRITAIN, 1855.

In entering upon a second discussion of the vexed question of Tonnage, in the *U. S. Nautical Magazine*, we shall furnish an extract from an eminent English writer upon the subject, introductory to the text of the British law, and its rules, as revised by Parliament in 1855. This writer being also the author of the mode of admeasurement adopted, and now having the supervision of its introduction in the British Customs department, we are glad of the opportunity to allow him to speak for himself with reference thereto. Our readers will observe that great practical accuracy has been aimed at in framing the rules of this new law, the best ever yet enacted in the world:

"With a view of removing the dissatisfaction of the ship-owners, arising from the objectionable principles contained in the plan adopted by the late Commission, and at the same time preserving the many essential points admitted to be established by their labors, the mode now proposed has been framed.

"The members of the Commission having sufficiently established to their minds the necessity of the *more correct mensuration of the form* of ships than had hitherto obtained, their further deliberations, under the guidance of this conviction, resulted in the adoption of the following general principles, embodied in a resolution, and moved by Mr. John Robinson, Chairman of 'Classification of Lloyd's Register of British and Foreign Shipping,' and seconded by Mr. Money Wigram, ship-owner and ship-builder—

"'That it is desirable to establish an easy practicable mode of admeasurement that will give a fair and equitable proportionate amount of tonnage for vessels of all descriptions; that shall not encourage the building of objectionable forms; and that will produce as nearly as possible the same results as under the Act 3 and 4 William IV., c. 55, commonly termed the "old law," or builder's measurement, and will also bring the tonnage chargeable on British and foreign ships as nearly upon an equality as possible." To virtually conform to the principles laid down by the Commission in the above exposition of the result of their labors, has been an object of great care with the framer of the plan about to be submitted. Each of the requirements

above enunciated will be found to be practically realized. Although the array of figures exhibited in the working examples may give an air of intricacy to the formula, at variance with the principles of an easy practical mode, the intricacy is really only in appearance; the uniformity of the system rendering it (with very little attention) much more simple and more easy of retention in the memory than the existing mode. The variety of measurements which are prescribed have been found to be absolutely necessary to prevent "encouragement to the building of objectionable forms," a most important requirement contained in the above results of the deliberations of the Commission.'

"And thus it may be remarked that, although the system now to be propounded does not emanate directly from the late Commission of Inquiry, it may nevertheless be considered as comprising the fruits of its deliberations, and as thus tending to fulfil the objects which the Lords of the Committee of Privy Council of Trade had in view in the issuing of that Commission, namely, to inquire into the defects and anomalous operations of the existing laws, and, if necessary, to frame a more perfect mode for the admeasurement of the tonnage of shipping.

"The plan is founded or based on the correct *internal capacity* of vessels, which is in accordance with the views of the general body of ship-owners; the internal capacity being considered by them as an essential principle in commercial tonnage for the purpose of levying dues and charges. The first object, therefore, was to attain a practically correct cubiture of this space. This is accomplished by means purely legitimate; and the number of cubic feet so arrived at, is divided by 100 for the register tonnage. The reason for selecting this particular divisor will be found hereafter explained.

"From this brief definition of the plan, it is obvious that the tonnage resulting from it must afford an immediate and just knowledge of the capacities or sizes of all vessels, whatever be their form.

"The tonnage so ascertained is simply a *cubical tonnage*, or true expression of the internal cubical capacity, in which every ton of tonnage represents 100 cubic feet of space. So that, if by this process one vessel measures 500 tons, for instance, and another measures 1,000 tons, it is known to a certainty that the latter vessel has double the cubical capacity of the former; for in each case every ton of tonnage contains exactly 100 cubic feet of space."*

Hence, if regular tonnage were thus constituted, it would always immediately convey to the mind a just idea of the exact, as well as the relative sizes or capacities of all vessels, of which we have but a very imperfect criterion in the register tonnage of the present day.

* Or, speaking generally of the size of these two vessels, we should say of the first, that she is a vessel of 500 tons cubical measurement, of 100 cubic feet to the ton; and of the second that she is a vessel of 1,000 tons cubical measurement of 100 cubic feet to the ton; having thereby a clear knowledge, not only of the *comparative* magnitudes of the two, but of the *real* cubical capacity of each.

"Rule No. 1.—*For the Admeasurement of Register Tonnage of Merchant Shipping, when the Hold is clear.*

"The length of the vessel is to be taken by a straight line on the upper side of the tonnage-deck (in vessels having three decks, the middle deck is to be the tonnage-deck; in all other cases the upper deck is to be the tonnage-deck), from the inside of the inner plank (average thickness), at the side of the stem, to the inside of the midship-stern timber or plank there (average thickness), as the case may be, deducting from this length what is due to the rake of the bow in the thickness of the deck, and what is due to the rake of the stern-timber in the thickness of the deck and one-third of the round of the beam;* the length so taken is to be divided into a number of equal parts in the different classes of vessels, as follows, that is to say:

1st	in vessels under		50	....		into	4	equal parts.
2nd	"	of	50	and under	120	"	6	"
3rd	"	"	120	"	180	"	8	"
4th	"	"	180	"	225	"	10	"
5th	"	"	225	and upwards		"	12	"

and in each case the transverse area of the vessel at each point of division is to be found in the following manner: that is to say, set dowu from the under side of the deck one-third of the round of the beam,† (in the case of a break in the deck, this distance is to be set down from a line stretched in continuation of the deck); and divide the depth between this point and the flat of the floor (deducting the average thickness of the ceiling) at the inside of the limber strake, into four equal parts, provided the depth at the middle division of the length should not exceed 16 feet; then measure, in feet and decimals, the inside breadths (to the average thickness of the ceiling between the respective points of measurement), at the three points of division, and also at the upper and lower points of the depth, and (numbering them from above) and multiply the 2d and 4th by 4, and the 3d by 4, and to the sum of these products add the 1st and 5th breadths; this quantity, multiplied by one-third of the common interval between the breadths, is the transverse area at the respective point of division; but if the middle depth, as aforesaid, should exceed 16 feet, the transverse areas in that case are to be found as follows: that is to say, divide the depth, as aforesaid, into six equal parts instead of four, as aforesaid, and measure the upper and lower points of the depth, and (numbering them from above) multiply the 2nd, 4th, and

* This is to give the length at the medium height of the deck.

† This point at each area is termed the medium height of deck there; for the area under the level of this height will be found to measure, very nearly, the same as the actual area bounded by the round or curve of the beam, which will be immediately perceived by describing the round of a beam, and drawing a horizontal line across it at one-third of the round set down from its middle point.

6th by 4, and the 3d and 5th by 2, and to the sum of these products add the 1st and 7th breadths; this quantity, multiplied by one-third of the common interval between the breadths, is the area, as before, at the respective point of division. The transverse area at each of the points of division of the length being thus ascertained, the cubical contents, or true internal capacity, under the deck, and thence the register tonnage, are to be found from them in the several classes, as follows, that is to say:

"1st. In the case of the length being divided into *four* equal parts, as aforesaid, the transverse areas at the extreme ends (which, except in the cases hereinafter described, are equal to 0) being numbered 1 and 5, and the intermediate areas at the 3 points of division being numbered succesively 2, 3, 4, multiply the 2d and 4th by 4, and the 3d by 2, and to the sum of these products add the 1st and 5th areas; this quantity, multiplied by one-third of the common interval between the areas, is the cubical content, or true internal capacity, which, divided by 100, gives the register tonnage of the vessel under the tonnage-deck.

"2d. In the case of the length being divided into *six* equal parts, as aforesaid, the areas at the extreme ends (which, except in the cases hereinafter described, are equal to 0) being numbered 1 and 7, and the intermediate areas at the five points of division being numbered successively 2, 3, 4, 5, 6, multiply the 2d, 4th, and 6th by 4, and the 3d and 5th by 2, and to the sum of these products add the 1st and 7th areas; the quantity, multiplied by one-third of the common interval between the areas, is the cubical content, which, divided by 100, gives the register tonnage of the vessel under the tonnage-deck.

"3d. In the case of the length being divided into *eight* equal parts, as aforesaid, the areas of the extreme ends (which, except in the cases hereinafter described, are equal to 0) being numbered 1 and 11, and the intermediate areas at the seven points of division being numbered successively 2, 3, 4, 5, 6, 7, 8, multiply the 2d, 4th, 6th and 8th by 4, and the 3d, 5th and 7th by 2, and to the sum of these products add the 1st and 9th areas; this quantity, multiplied by one-third of the common interval between the areas, is the cubical content, which, divided by 100, gives the register tonnage of the vessel under the tonnage-deck.

"4th. In the case of the length being divided into *ten* equal parts, as aforesaid, the areas at the extreme ends (which, except in cases hereinafter described, are equal to 0) being numbered 1 and 11, and the intermediate areas at the nine points of division being numbered successively 2, 3, 4, 5, 6, 7, 8, 9, 10, multiply the 2d, 4th, 6th, 8th and 10th by 4, and the 3d, 5th, 7th and 9th by 2, and to the sum of these products add the 1st and 11th areas; this quantity, multiplied by one-third of the common interval between the areas, is the cubical content, which, divided by 100, gives the register tonnage under the tonnage-deck.

"5th. In the case of the length being divided into *twelve* equal parts, as

aforesaid, the areas at the extreme ends (which, except in cases hereinafte described, are equal to 0) being numbered 1 and 13, and the intermediate areas at the eleven points of division being numbered successively 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, multiply the 2d, 4th, 6th, 8th, 10th, 12th by 4, and the 3d, 5th, 7th, 9th, 11th by 2, and to the sum of these products add the 1st and 13th areas; this quantity, multiplied by one-third of the common interval between the areas, is the cubical content, which, divided by 100, gives the register tonnage of the vessel under the tonnage-deck.

"In order to ascertain the tonnage of open vessels, the upper edge of the upper strake is to form the boundary-line of measurement, the depths being taken from athwartship-line extended from upper edge to upper edge of said strake, at each division of the length.

"Provided always, in the several cases hereinbefore described, that in those vessels in which the areas at the extreme ends of the deck are not equal to 0), as may be the case in some barges and other craft terminated at their ends by transverse areas,) such areas be calculated in the manner above described for the intermediate areas, and added in the process (being the first and last areas) as above described in each case.

"If the vessel has a break in the deck, or a poop or round-house, or a closed-in forecastle, or any other closed-in space, measure its internal mean length at the middle of its height, and divide it into two equal parts; measure, likewise, three inside breadths (also at the middle of its height), namely. one at each end and one at the middle of the length (the foremost breadth, in the case of the forecastle, being the breadth of the stem); then, to the sum of the end breadths, add four times the middle breadth, and multiply the whole sum by one-third of the common interval between them, which gives a mean horizontal area of the space; this multiplied by its height, is the cubical content, which, divided by 100, gives the tonnage due to the said space, which is to be added to the former result (except in the case of the forecastle hereinafter described), for the register tonnage of the vessel.

"Provided always, that if the tonnage due to the forecastle, as above ascertained, shall not amount to the one-twentieth part of the tonnage under the tonnage-deck, such tonnage shall not be added to the original result, nor be deemed as forming any part of the register tonnage of the vessel; but if the tonnage due to the forecastle, as aforesaid, shall exceed in amount the one twentieth part of the tonnage under the tonnage-deck, such excess shall be added to the original result for the register tonnage of the vessel.

"And if the vessel has a third deck (or what is commonly called a spar deck), measure the inside length from plank to plank, at the middle of the height between it and the tonnage-deck, and divide the length so taken into the same number of equal parts as there are divisions in the length of the tonnage-deck; measure also the inside breadths (at the middle of the height, as aforesaid), at each of the points of division; also the breadth at the stern nd the breadth of the stem, and numbering them successively 1,2, 3, &c.,

(No. 1 being that of the stern,) multiply the 2d, 4th, 6th, &c., including all the even numbered breadths, by 4, and the 3d, 5th, 7th, &c., including all the odd numbered breadths (except the first and last), by 2; to the sum of these products add the first and last breadths; this quantity, multiplied by one-third of the common interval between breadths, is the mean horizontal area of the space between decks, which, multiplied by the height between the two decks, gives the cubical content, and this, divided by 100, is the tonnage due to the space between decks, which is to be added to the above results for the register tonnage of the vessel.

RULE 2.—*Admeasurement of Steam Vessels.*

(By the following process steam vessels are placed in the same relative position with regard to sailing vessels, as under the Act 8 and 3 Vic., c. 89.)

"In the admeasurement for tonnage of any ship or vessel propelled by steam by each of the several rules hereinafter described, the total tonnage is to be ascertained as for sailing vessels; and the tonnage due to the cubical contents of the engine-room is to be deducted from the total tonnage of the vessel, as aforesaid, and the remainder is to be deemed the true register tonnage of the ship or vessel; the tonnage due to the cubical contents of the engine-room is to be determined in the following manner, that is to say: measure the inside length of the engine-room between the foremost and aftermost bulkheads, or limits of its length, and having found the transverse area at these limits to the height of upper deck, and also the area at the middle point between them, in the same manner as hereinbefore described for ascertaining the other areas, then to the sum of the two end areas add four times the middle one, and multiply the whole sum by one-third of the common interval between them, which is the cubical content, and which, divided by 100, gives the tonnage due to the engine-room.

RULE 3.—*General Practical Directions in reference to the taking of the Measurement required by Rule No.* 1.

"The *correctly* taking of the required measurements being of considerable importance, the following general directions to that end may be useful for the guidance of those who have not a professional acquaintance with the subject:

"*Length.*—The length of the tonnage-deck is to be taken by tightly stretching a line on the upper surface of the deck, at such a parallel distance from the middle line of the ship as to clear the several hatchways and other obstacles that may present themselves; the line is then to be measured, marking the ends of the line on the deck; these points are then to be squared into the middle line of the ship, and the distances taken from them so squared in, to the inside of the plank at the bow and stern, making the requisite deductions for the rakes of the bow and stern, as required by the rule; the sum of these two distances added to the length of the line measured, as aforesaid, gives the whole length required.

Points of Division of the Length, or Stations of the Transverse Areas.

"The length, taken as above described, being divided into the required number of equal parts, the points of division, which are the stations of the areas, are to be marked correctly on the tonnage-deck ; a line is then to be extended down the main hatchway, at the middle line of the ship, in a direction perpendicular to the keel, by means of a square placed on the upper side of the keelson ; the distance of the midship area from the line at the tonnage-deck is then to be set off from this line on the keelson, which gives the station of the midship area on the keelson ; and the stations of the others are obtained by setting off afore and abaft the midship, one-third of the common interval between them, as already marked off on the tonnage-deck.

"*Depths.*—The depth of the midship area is to be taken in a direction perpendicular to the keel, from the underside of the deck to the upper side of the floor timber at the limber strake, keeping the measuring staff square to the keel by means of a square placed on the upper side of the keelson, deducting from this depth one-third of the round of the beam and the average thickness of the ceiling on the floor timber. The depths at the other areas are to be taken in the same way, placing the measuring staff square to the line in continuation of the upper side of the keelson in midships.

"*Breadths.*—The depth at any area being taken as above directed, and divided into the required number of equal parts, the breadths are to be taken at the points of division, and also at the upper and lower of the depths, as follows :—

"A stiff batten or staff, with the points of divisions or stations of the breadths properly marked on it, is to be fixed in position (perpendicularly both ways) to the side of the keelson ; the breadths of the vessel are then to be taken by stretching a line, square athwartships as well as horizontally through each marked on the bottom, as aforesaid, from ceiling to ceiling, (taking the average thickness between the respective points of measurement) ; but to insure the athwartship and horizontal direction in which the line is to be held, two other battens may be placed in the same athwartship plane with the other already in position, one on the other side of it, at equal distances from the middle line of the keelson, having the heights at which the breadths are to be taken levelled out on them ; the line then held through the respective points on each batten, insures the proper direction in which the breadths are to be taken."

NOTE.—Here follows an Epitome of Rule No. 1, heading a FORMULA assigned for the use of the Measuring Surveyor, in the practical operation of tonning vessels. We do not give it space at present, however, inasmuch as we hope to be called upon before the forthcoming Session of Congress shall have closed, to publish such a formula for the use of the Surveyors of Tonnage in the United States.—*Eds.*

" Approximate Rule, No. 2.—*For the purpose of determining the Register Tonnage of all such Ships as there shall be occasion to measure while their cargoes are on board.*

Rule.—The length is to be measured on the upper deck, from the outside of the outer plank at the stem to the aft side of the stern-post, deducting therefrom the distance of the aft side of the post from the rabbet, where the counter plank crosses the rabbet; measure also the greatest breadth to the outside of the centre planking or wales; and then, having first marked on the outside of the ship the height of the upper deck at the ship's side, girt the vessel at the greatest breadth in a direction perpendicular to the keel, from the height marked on the outside of the ship, as aforesaid, on the one side, to the same height marked on the other side, by passing a chain under the keel; to half the girt thus taken add half the main breadth, square the sum, multiply the result by the length of the vessel taken as aforesaid, and the product by the factor .0018 (eighteenth ten thousandths) in the case of vessels built of wood, and by .0021 (twenty-one ten thousandths) in the case of vessels built of iron, for the register tonnage respectively under the upper deck.

" If the vessel has a break in the deck, or a poop, or a roundhouse, or closed-in-forecastle, or any other covered in space, they are to be measured as severally described for such spaces in Rule No. 1, and subject to the same provisions and limitations (if any) as therein prescribed for those spaces, the tonnage due to the same is to be added to the above results for the whole register tonnage of the vessel.

" It may be desirable here to observe, that it will be found stated in the brief analysis which has been given to this Rule at the close of Chap. II., that the factor .0018 here employed, is purposely intended (for reasons therein mentioned) to produce an increase of tonnage in the usual form of shipping, over that of Rule No. 1, of about three or four per cent.; and the cause of the still greater deviation of the Rule from the truth, to be observed in the subjoined examples of the shallow and sharp vessels, is also accounted for in the analysis above referred to.

" If the nearest approximation to the correct results of No. 1, in reference to the usual form of merchant shipping, were considered desirable, the factor to be employed would be .00173 instead of .0018."—*Moorsom's Review of Tonnage.*

Mr. Moorsom, in his book on " Tonnage," from which the foregoing Rules have been extracted, has entered very elaborately into the analysis and proof of their correctness in practical application. It will be sufficient for us to say, that, having examined them ourselves, we find them well calculated to admeasure the *internal cubical space* of vessels; and should it be deemed best by the commercial men of this country to adopt the system of *internal* tonnage, we are of opinion that the present English law requires little or no improvement to answer their wants. But we shall endeavor to show that both *internal* and *external* measurement are required in this country.

REVISION OF THE TONNAGE LAWS OF THE U. S.

ANOTHER year is drawing to a close, and with it another Session of Congress is opening before us. Upon the subject of Tonnage we have already said much in previous volumes of the Magazine, but have not yet exhausted either our patience or our subject matter; and so far from losing sight of the vast importance of revising our Rules for the Registry Admeasurement of Shipping, we are determined to discuss the matter until this, the most eminent of commercial reforms, shall have reached a fair hearing in the Senate chamber at Washington. We know that our present able Secretary of the Treasury, Mr. GUTHRIE, is desirous of promoting a reform of our present worn-out system of measuring vessels for Registry, and intends to have it repealed during the coming winter. We have long since been favored with a copy of his "Bill for a Revision of the Revenue Laws," from the Department, in which it is provided that the Rules for Tonning vessels shall be such as may be deemed proper and just by the Secretary of the Treasury, who shall have power to change them from time to time as improvement may seem to be required. This most excellent bill has received unusual amount of care and foresight in its inception, and should it be passed by, as it will be brought before, the ensuing Congress, it will reflect everlasting honor upon his statesmanlike genius. We have no doubt that if Mr. Guthrie shall be permitted to prescribe a mode of admeasurement, it will be such a one as we shall be able to approve in behalf of commercial men; but it may be that Congress will see fit, itself, to determine the Rule in the same manner that the Parliament of England has lately done. For it will be remembered that a new system of admeasurement went into operation in that country on the first of May last, and its author, George Moorsom, Esq, Nautical Architect, has been invested with authority by the government for supervising its introduction. With a view to diffusing all the information which we have on this subject, before the question shall be entertained by Congress, we intend to furnish the readers of the U. S. NAUTICAL MAGAZINE AND NAVAL JOURNAL with an abstract of the tonnage discussion, and origin of the present law, in England, in the present and forthcoming numbers. For a brief history of those laws in England the reader is referred to the previous volumes of the Magazine, where our own views will also be found upon the correct mode of measurement.

Herewith we publish, for the first time in this country, the Report of a Parliamentary Committee appointed in 1849, to investigate the complaints arising from the working of the "New Law," so called, enacted in 1836, (and a much better law than we now have in the United States, to our shame as a leading commercial nation,) and to propose a better Rule of Admeasurement.

Many of the most scientific and practical minds of Great Britain—ship-builders, owners, and underwriters—composed this committee, as follows:—

The Right Hon. Lord John Hay, C. B., M. P., Lord of the Admiralty, Chairman.

Mr. John Claremont Whitman, East India Director.

Capt. Bonham Bax, Elder Brother of the Trinity House.

Mr. G. Frederick Young, Chairman of the General Ship-owners' Society.

Mr. William Tindall........................ Deputy Chairman of the Society of Lloyd's, Register of British & Foreign Shipping, and Deputy Chairman of General Ship-Owners' Society.

Mr. John Robinson........................ Chairman of the Committee of Classifications of Lloyd's Register of British and Foreign Shipping, Merchant and Underwriter.

Mr. W. Wilson Saunders, F. S. A., F. L. S., F. H. S. Member of the Committee for Managing the Affairs of Lloyd's, and Member of the Committee of Lloyd's Register of British and Foreign Shipping.

Mr. Money Wigram, Ship-builder and Ship-owner.

Mr. Richard Green, Ship-builder and Ship-owner.

Mr. A. F. B. Creuze, F. R. S........................ Chief Surveyor of Society of Lloyd's Register of British and Foreign Shipping, and Member of the School of Naval Architecture.

Mr. Samuel Ritherdon........................ Surveyor of Shipping to the East India Company, and Member of the School of Naval Architecture.

Mr. William Parsons, Member of the School of Naval Architecture.

Mr. Henry Cradock........................ Assistant-Master Shipwright, her Majesty's Dockyard, Portsmouth, and Member of the School of Naval Architecture.

Mr. George Moorsom, Member of the School of Naval Architecture.

Geo. Moorsom, Honorary Secretary.

The mode which they recommend in lieu of the "New Law" act of 1836, so called, was based on *external measurement* or displacement, "to the medium height of the upper side of the weather deck," as will be seen. It was not adopted, as will appear in the sequel; but at the end of five years' discussion an *internal measurement* was fixed upon as most eligible. We quote as follows:

"*Report of the Committee appointed by the Lords Commissioners of the Admiralty, at the Request of the Lords of the Committee of Privy Council for Trade, for the purpose of Inquiring into the Defects of the Method of Measuring Ships for Tonnage; and to frame a more perfect Rule, if the Result of their inquiry confirm the Opinions which have been expressed to the Faults of the present System.*

"The committee, having duly examined the papers submitted to their investigation, and finding the complaints urged against the present system in part confirmed by their inquiry, have directed their attention to the framing of a more perfect method of admeasurement.

"The committee are of opinion, that the *equitable basis* on which charges for dock, light, harbor and other dues should be made, is that of the entire cubic contents of all vessels measured *externally*.

"That, inasmuch as the poops, forecastle, and other covered-in spaces are directly or indirectly a source of earnings for cargo or passengers, those spaces should be all measured.

"That with a view to obviate the increase of aggregate tonnage to result from the proposed new mode of measurement, the factor 27 (twenty-seven hundredths) as shown in paper marked A, exhibiting measurements of various vessels, should be adopted as a close approximation to the Law 3 and Wm. 4, commonly called the "Old Law of Measurement."

"That, as it will be occasionally necessary to measure vessels afloat for levying the required dues, and the scientific branch of the committee having clearly shown that a sufficiently correct measurement by girting can be made of all vessels (in proof of which the paper marked A is referred to,) they should be measured agreeably to the approximate Rule, No. 2, paper marked B, but that it should be at the owner's option to have such vessels re-measured by the correct Rule, No. 1, at any period within two months from the time of levying such dues, any excess charged, arising from the use of the approximate Rule, being remitted accordingly.

"That, in the case of a ship or vessel having any doubling or sheathing on her at the time of being measured for register, allowance for the thickness and extent of such doubling or sheathing should be made, so as to obtain the external measurement to the outside planking of a single bottom, as the basis of measurement.

"That with regard to the admeasurement of vessels propelled by steam, the whole tonnage should be calculated as for sailing vessels; and that, in order to carry out the principle which has been laid down, of preserving, as nearly as possible, the aggregate amount of tonnage under the old law unaltered, it is necessary, as heretofore, to deduct from the above the tonnage due to the engine-room measured externally. But the committee beg to suggest that the deduction of the engine-room is an advantage given to steam over sailing vessels, and is a question which merits consideration by the proper authorities, although the committee do not deem it within their province to enter upon.

"And the committee, having also investigated the several propositions referred to them, beg to recommend Rule No. 1, being founded on the true external mensuration of the hull.

"As it will be occasionally necessary to ascertain the tonnage of vessels while afloat for lighthouse and harbor dues, the committee have added, for that purpose, the approximate Rule, No. 2.

"Besides these two general Rules, the committee beg leave to recommend,—

"1. That the length between the perpendiculars, the extreme breadth,

and the depth in midships from the underside of the weather deck to the ceiling at the timber strake, be inserted in the vessel's register.

"2. That the tonnage due to the poop, forecastle, and other covered-in spaces, which are measured separately from the main body of the vessel, be also inserted separately under their respective heads in the vessel's register.

"3. That the register tonnage be deeply carved in figures, of at least three inches in length, on the main beam of every decked vessel in the United Kingdom.

"4. That the tonnage of every vessel now registered be allowed to remain unaltered, unless application be made by the owner to have it re-measured according to the new process.

"And this committee strongly urge on the Board of Admiralty and all other Government Boards, the necessity of adjusting their system of contracts for the hiring of transports, &c., to the proposed new mode of measurement.

"The committee in concluding this Report, beg to express their sense of the highly efficient and scientific aid they have received from Mr. Parsons, the originator of the proposed plans of admeasurement, and from Messrs. Cradock and Moorsom, who have conducted the operations to test those plans, the latter gentleman having also acted as Secretary; and the committee feel it their duty to recommend those gentlemen to the consideration of the Lords Commissioners of the Admiralty and the Lords of the Committee of Privy Council for Trade.

[We omit a long table illustrating the practicability of ascertaining "approximate tonnage by girting" as applied to vessels of every size and denomination. We publish the following RULES which were reported by this Committee, in order to show *what* was proposed by such an able body of thinkers to settle this vexed question of tonnage. They failed, however, to please the commercial public of Great Britain, and Moorsom's mode of admeasurement has ultimately been adopted instead. We shall give this mode to our readers in the next number from the pen of the author.]

RULE NO. 1—*For the Measurement of the Register Tonnage of Vessels on the Building Slip or in Dry Docks.*

"Determine the length between the perpendiculars, by setting up from under the under side of the false keel .6 (six-tenths) of the main breadth, taken to the outside of the plank of the bottom, to cut the outside of the rabbets (or those produced) of the stem and stern-post.*

"Compute the correct *external* bulk of the vessel (exclusive of any doubling or sheathing which may have been brought on the proper plank of the bottom,) to the medium height of the upper side of the weather-deck, by means

* These intersections, squared down to the keel, give the positions of the perpendiulars

of a curve of areas, constructed from five or more transverse sections, as may be required.

"Divide the correct mensuration in cubic feet, thus attained, by 35, and multiply the quotient by the factor .27 (twenty-seven hundredths) for the register of tonnage.

"If the vessel has a poop, or any other covered-in space, take the external mean length, breadth and heighth of such space; multiply these dimensions together, divide the product by 35, and multiply the quotient by the factor .27 (twenty-seven hundredths) for the tonnage due to the same, which, added to the above result, will give the whole register tonnage of the vessel.

"RULE No. 2—*Or, Rule of Approximate Tonnage for the Measurement of the Register Tonnage of Vessels, when necessary to measure them afloat.*

"Determine the length between the perpendiculars, by setting up from the under side of the false keel .6 (six-tenths) of the main breadth, to cut the outside of the rabbets (or those produced) of the stem and stern-post.

"Square up these intersections to the weather-deck; divide the distance or length between them in six equal parts.

"At each of the five points of division, girt the vessel in a direction perpendicular to the keel, from the medium height of the upper side of the said deck on the one side, to the medium height of the same on the other side, by passing a chain under the keel.

"Take also the main breadths at each of these five stations.

"Then to the sum of the half-breadths, add the sum of the half-girths, take one-fifth of this quantity for the mean, square this mean, and multiply the result by the length between the perpendiculars, and this product by the factor, .002, for register tonnage.

"If the vessel has a poop, or any other covered-in space, the tonnage due to such space is to be found as directed for the same in Rule No. 1, which, added to the above result, will give the whole register tonnage of the vessel.

"*Register Tonnage of Vessels propelled by Steam.*

"The whole tonnage of vessels propelled by steam, is to be ascertained in the same manner, agreeably to the respective rules, as the register tonnage for sailing vessels; from which is to be deducted the tonnage due to the engine-room, the remainder being the register tonnage.

"The tonnage of the engine-room, when measured on the slip, or in dock, is to be found in the same manner as the tonnage of the whole bulk; but when measured afloat, is to be found as follows:—Multiply together its external mean length, breadth and depth, divide the product by 35, and multiply the quotient by the factor, .27 (twenty-seven hundredths), for the tonnage required.

"*Register Tonnage of Open Vessels.*

"In order to ascertain the register tonnage of open vessels, the same rules

are to be respectively employed as for other vessels, the upper edge of the upper strake or gunwale forming the boundary of the measurement.

(Signed)

JOHN HAY,	AUG. B. CREUZE,	S. RITHERDON,
JOHN C. WHITMAN,	JOHN ROBINSON,	W. WILSON SAUNDERS,
HENRY B. BAX,	WILLIAM TINDALL,	RICHARD GREEN,
GEO. MOORSOM,	H. CRADOCK,	WILLIAM PARSONS,

PAPERS ON NAVAL ARCHITECTURE.

Concluded from page 103.

As there is a possibility of being misunderstood, let me explain what I mean by the past. When applied to my subject, I mean the knowledge which was gained yesterday: I mean the experience we collect from day to day; not only what we may embody in our own conceptions, but all that we may learn from others. Now I would ask, in the true spirit of inquiry, and desire to advance, for a better method than to deduce by comparisons, a pure system upon which to found a true science. For what is the definition to science, as given to us? Is it not the knowledge of many combined, systematically, and arranged in such a manner as to become attainable by one.* With these desultory remarks, let us proceed with our cotton ship.

Having assumed what we may consider our best dimensions for length and breadth, let us say a few words upon what we think a cotton ship should be. In my opinion, a cotton ship should be formed in such a manner that her stability should be great enough, so that she may be moved at all times without ballast. This cannot be obtained if we assume too much depth. Now the question is, how much depth can we have upon this breadth, and not lose our stability? This we can ascertain from calculation only; and the result depends upon the form we assume, and upon the construction, or manner of putting our materials together. We may assume any dimensions or form we please; and if, in building, we make our topsides with as heavy and our bottoms with as light scantling as possible, as I have often seen, we shall not attain our result. The best dimensions are often spoiled by an inferior method of construction. Now, for carrying cotton, we want a ship

* Science, in its general sense, may be defined to be the *comprehension of truth.* And inasmuch as modelling and building ships is both a science and an art, we may adopt the words of Playfair, in saying, that a principle in science is a rule in art; or with Hooker, that no science maketh known the principles on which it buildeth; hence, we should make a distinction between the science of shipbuilding and the art of shipbuilding. The science of shipbuilding is based on the immutable laws of nature, and, as a science, is the best mechanical illustration of practical geometry known to man; but, as an art, it can never resolve itself into a science by comparison, however large the combination of knowledge, or systematized the arrangement.—EDS.

of large interior capacity: and we necessarily enlarge our lines as much as possible both below and above; but by enlarging the lines below too much, we cannot carry our weight on so light a draught, and besides we lower our centre of displacement so much, that when we load our vessel with heavy cargoes, we find our stability all gone. When the ship is immersed beyond a certain line, or, in other words, the more we fill the lower lines, the less able the ship becomes upon a deep draught. Another thing—if we do not fill our lower lines sufficiently to sustain the ship on her light lines; that is, before she has displaced her weight in the water, we find the ship rolling around the wharves and unmanageable without ballast; and this, in my opinion, digressing a little from the subject, is the origin of the form which is usually considered best for ships of large capacity. The forward end has been kept as full as possible to obtain the capacity below, while the after end has been cut away on the lower lines to obtain the necessary stability, both light and loaded. And is it not correct? We should like to hear remarks upon this point.*

Another point in regard to a difference in draught of water. As many of our harbors have no water to spare, it is not desirable to increase the draught aft beyond the draught amidships; and if the vessel is properly formed, there is no actual necessity of increasing the draught aft, or making a difference in draught at all. Difference in draught is only desirable when we wish to construct an extremely sharp bow, to be worked under sail; and as we cannot place the masts far enough forward without bringing too great leverage forward of the centre of gravity, it is my opinion that a very sharp bow requires the masts farther forward than a very full bowed ship, though less able to bear them. The easiest and simplest method of constructing, is to increase the draught aft, thereby bringing the centre of rotation farther aft; but if this be carried beyond a certain limit, you lose the good effect intended, by accumulated resistance aft, and this must be looked after in forming the body, taking into consideration what your difference in draught is intended for, which is not to increase your resistance, but to be in such a form as to help the action of the sails upon the hull, and for no other; that is, we wish to carry our effort of sails farther forward; but it is not expedient to do it by moving the masts: therefore we adopt this as the next best resource, that is, to bring the resultant of the water forward. But we have wandered away from our cotton ship again.

We shall construct her, then, to sail upon an even keel, or nearly so; we shall give her all the buoyancy upon her lower lines consistent with maintaining a proper stability upon a deep draught of water, that is, the extreme draught intended; for I maintain that all sailing vessels should be constructed to a certain draught of water, taking the extreme draught to which they can be loaded by the heaviest cargoes, as the limited line; and this brings in tonnage laws, on which we wish to say a word by-and-bye.

* If correspondents do not furnish them, we shall, in a subsequent number.

We will assume, then, that taking into account the strength* of the ship to be constructed, that for 36 feet extreme breadth, 19 feet is the limit to which this breadth should be loaded, allowing the keel to be 18 inches clear of garboard, our construction must be 17 feet 6 inches from the top of the keel. We will now assume this as the line upon which to base our calculations. Now, before we go any farther, let us begin to compare; let us see what has been done by others; let us get their experience if we can; let us examine their forms; let us see what we have made; let us not inquire for excellencies alone, but for defects in form; let us hear what each and all have to say about cotton ships. Mr. A. comes in and says he has owned and sailed a ship of ——. He describes the form; she had a sharp bow; she was comparatively full aft without a drag. He says the ship would sail fast; but in a head-beat sea, would pitch badly. How can you account for the pitching of the ship, Mr. A.? Well, he thinks it was owing to the sharpness of the bow above water. Mr. B. comes in. He owned and sailed a ship of ——. He says his ship was full bowed, and extremely fine aft. He says the ship would sail very fast, but in a head-beat sea, would pitch badly, very badly. How do you account for the pitching of the ship, Mr. B.? I think she was too sharp below her upper lines on the bow. How foolish all this is, and how foolish to call in these wiseacres† to decide upon a model, when you might gain just as much, and much more information, if you should say, Dear ship, what makes you pitch so? I wish you would not pitch so, or else tell me how to remedy this defect in you. This last query is the most sensible one, and brings us to study the form, and see what is the matter, and how it can be remedied.‡

We now come to the point, that is, to see how we shall make our two ends love each other, or, in other words, make a bow adapted to the after end. This brings the necessary comparison and calculations on the table again. To find what is the best method of determining the relation which the fore body should bear to the after body in capacity; or, in other words, deter-

* The strength of a vessel and her shape are questions of different import. No principle of utility in form should be sacrificed for strength; for, in so doing, we make *science subservient* to *art*. It is a known law in maritime construction, that the best forms, both for burden and speed, do not possess in themselves an equal amount of strength with more heterogeneous forms; hence, we are brought to the first principles of constructive art, to obtain strength whenever we endeavor scientifically to improve the shape of vessels; and we can only do this in wooden vessels, by a more mixed construction of iron with wood.—Eds.

† By wiseacres, I mean those persons who pretend to decide upon the qualities of a ship, never having studied the first principles of the art.

‡ We may improve the adaptation of the two ends of the vessel to each other by this mode of comparison, but we never can render shipbuilding a science, without reference to the principles upon which buoyancy and resistance are based.—[Eds.

mine, by comparisons, the best position for the location of the centre of displacement. Having ascertained this, we will go to the topsides, and find out what height our ship should have above the water.

PHINEAS PETT.

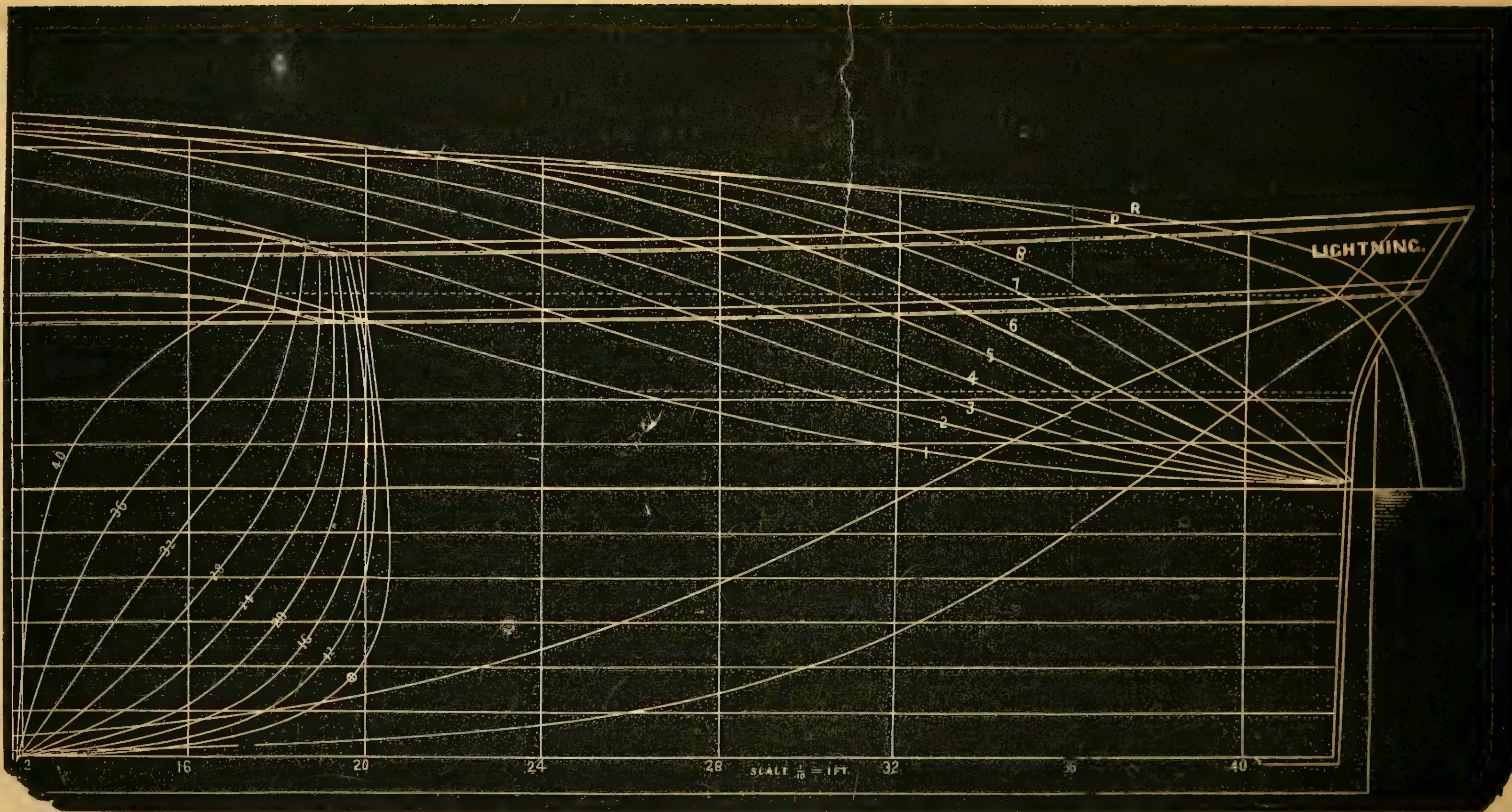
(*To be continued.*)

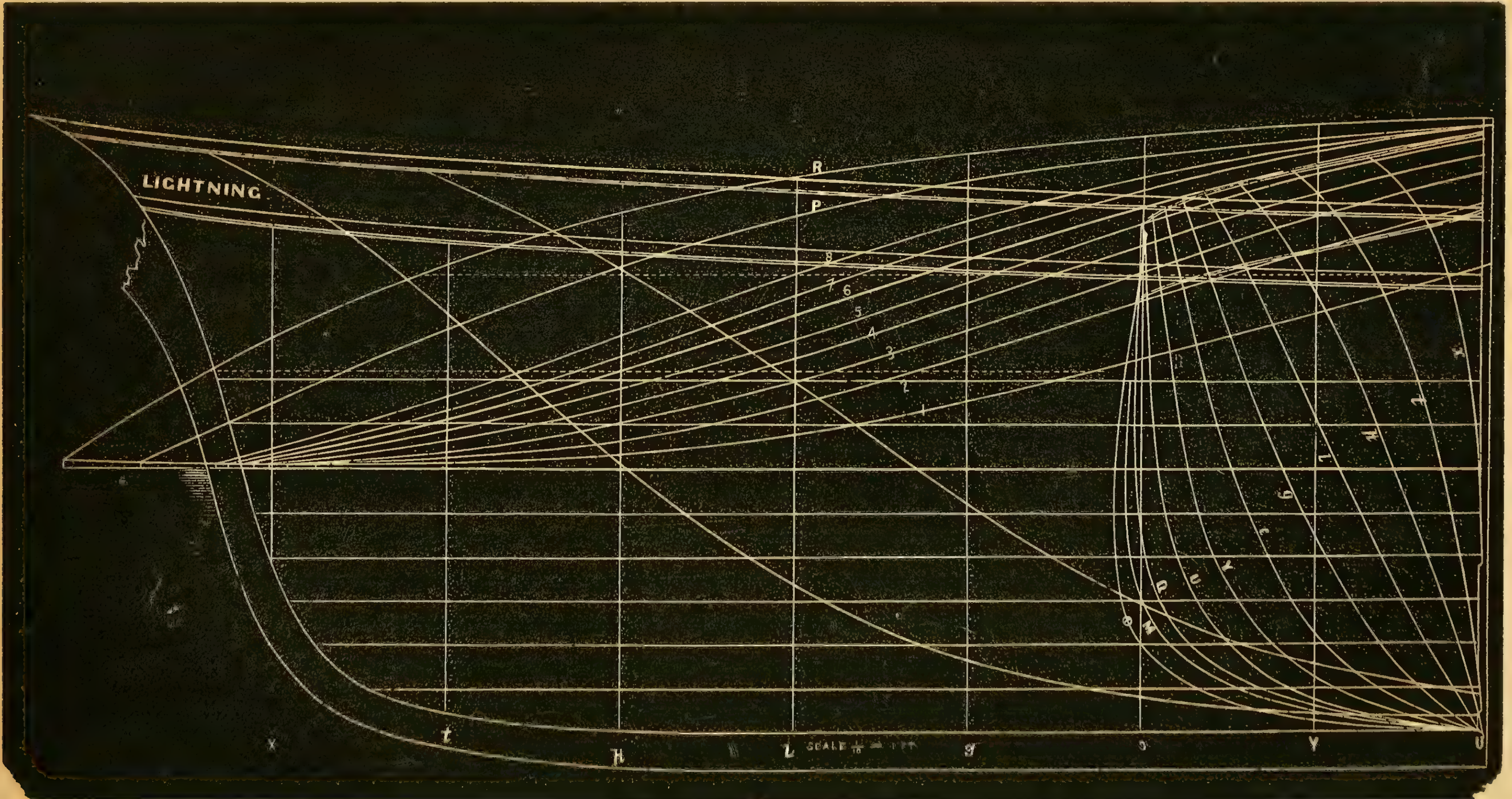
CLIPPER SHIP LIGHTNING, OF BOSTON.

IT always affords us pleasure to furnish a tangible exponent to the progress of Marine Architecture in every part of our continent, from the smallest coasting schooner to the noblest clipper which circumnavigates the globe. In a former number of the Magazine we published the lines of the "*Stag-Hound*," the first of the numerous fleet of celebrated clippers which has been built by Mr. Donald McKay, at Boston, within a period of four years. Through his politeness we now publish the draught and calculations of the famous Australian racer, "LIGHTNING," one of the latest and sharpest ships which her builder has constructed. This vessel was built in 1854, and fairly reflected the skill of Mr. McKay at that period. She is owned in England, and sailed from Boston to Liverpool in 13 days and 20 hours, and, on her first trip to Melbourne and back, bore off the palm for speed on that route. She accomplished the outward run in 77 days, the return voyage 64 days; second outward passage, 75 days, homeward, 65 days; the shortest passage on record being 63 days. She is owned by the proprietors of Baine's Line of Liverpool and Australian packets, and her performances indicate a profitable model, beyond the mark of steamships, upon the route to which she has been eminently adapted.

The dimensions and calculations of the "Lightning" will be found as follows:

		Feet.
Length on the load-line for calculations		227.50
Height of load-line, above base line		15.
Breadth on load-line, at dead flat		43.12
Breadth extreme		44.30
Area of load water plane, sq. feet	3383.17	
Exponent of the same	0.654	
Centre of gravity of same abaft mid-length		3.34
Area of greatest transverse section, sq. feet	572.6	
Exponent of the same	0.885	
Location, abaft mid-length, of load-line		8.
Moulded displacement, in cubic feet	57.227	
Moulded displacement, in gross tons	1635.	
Exponent of the same	0.524	
Centre of gravity below load-line		5.89
Centre of gravity abaft mid-length of do		2.24
Moment of stability, S. $\frac{2}{3}d\ x =$	775744.	
Height of *meta centre* above centre of buoyancy		13.53


LIGHTNING.
SCALE 1/10 = 1 FT.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From the above data, as well as from the draught, it may be seen that no timid hand, or hesitating brain, gave form and dimensions to the "Lightning." Very great stability, acute extremities, full, short, midship body, comparatively small dead-rise, and the longest end forward, are points in the excellence of this ship.

By European naval authorities such a model would be repudiated on account of the centre of gravity of displacement being found abaft of mid-length of load line, but such authors have little weight with the independent modellers of America. And although the mechanical advisers of her owners have accomplished their purpose, by filling out the bow of the vessel to suit their crude notions of science, it will be found that some modification in the distribution of the propulsory power was all that was necessary (as we shall show in connection with her spar draught in our next issue) to make her all that could be desired even by the fogyistic advocates of full bows in the Old World.

It having been laid down by Chapman, the celebrated Swedish Naval Architect, that the centre of buoyancy should be determined *forward* of the mid-length of the load-line within certain arbitrary limits, because, from an analysis of the bodies of vessels which bore good characters at sea, he found this point so situated, more than half a century ago, that *naval* and marine architects of the Old World have never ventured to risk an experiment to test the value of this stale dogma. In England "experimental *fleets* have been built, none of which have ever established any marked distinction for their constructors, most of them having reached the *ultima thule* of scientific men, so called, because they have systematized hereditary knowledge, and trammelled themselves with formulas drawn from the *half revealed mysteries* of ship-building. The moderate dead rise of this remarkable ship is also at variance with *naval* learning. In fact, some builders are to be found in every part of the world, who, by this time, are awaking to the belief, that the *bow* of a ship is the seat of life and motion, nay, intelligence itself may seem almost developed in this part of the body under the hand of the artistic delineator of form. In the "Lightning" the fuller end is the posterior, as it should be, for speed. But the strongest point is her *stability*, her depth of hold being chosen without regard to a violation of "tonnage" laws. This need no longer be done in vessels for British markets. The "Lightning" is a worthy example of an improving art.

THE NAVAL EXPEDITION AGAINST THE KULAN PIRATES.

FROM the *China Mail* of Aug. 10, we gather the following detailed account of the combined expedition against the Kulan pirates:

A lorcha and five junks, under convoy of the steamer Eaglet, had been cut off under pirates, who displayed such a formidable battery and determined front, that Captain Caldwell was unable to rescue them, and had to apply to Captain Fellowes, of H. M. S. Rattler, for assistance. This was readily granted, and the Rattler, with Captain Caldwell on board, started for Kulan, near which they sighted the pirates, and followed them as far into the bay as the depth of the water would permit. The pirates, quite aware of their advantage in light draught, and conscious of their ability to resist successfully any attempt that might be made on them from the boats of the steamer, fired a few harmless broadsides in defiance, and stood in towards Kulan.

Captain Fellowes thereupon returned to Hong Kong, and invited the co-operation of the U. S. steamer Powhattan, now in the harbor under repair; when it was determined that the Rattler, with three boats and a hundred officers and men of the American steam frigate should form the expedition. Captain Caldwell volunteering the use of his steamer to tow the boats up the bay. Accordingly the Rattler, with the Eaglet in tow, and the Powhatan's boats astern of her again, left the harbor on Friday about three o'clock. First Lieutenant Pegram, and Lieutenant Jones with his marines, of the Powhattan, taking passage in the Rattler, and the blue jackets in the Eaglet. The steamers arrived close to Kulan before midnight, the Eaglet anchoring a couple of cables' length in shore of the man-of-war. At five next morning, the launches were sent alongside of the Rattler for the marines, and then with the Powhattan's cutter, and three boats from the Rattler, besides the captain's gig, made fast astern of the Eaglet, which, everything being ready, steamed slowly up the bay. At Kulan, only one junk was to be seen, and it was feared the birds had flown; but Captain Caldwell descried a lorcha at anchor, at the head of the bay, and steered in that direction. The lorcha got under way, apparently with the intention of escaping, when Captain Fellowes dispatched the Rattler's pinnace, under command of Lieutenants Wrey and Greer, and Mr. Lomax, mate; and Powhattan's cutter, under command Acting-Master McCauley and Assistant-Surgeon Schriver—the English marines having been first transferred to the American launches—to intercept her; and these last had unfortunately got beyond recall, before the pirate fleet, with her prizes, numbering in all some thirty-six sail, were observed at anchor, in the narrow and shallow passage from which the lorcha had started. As the steamer approached, the junks hoisted their sails, but without getting under way, until several congreve rockets, discharged from the Eaglet's quarter-deck, by Mr. Pine, the gunner, and two marine artillery-

men from the Rattler, and two or three well-directed shots from her thirty-two pounder, fired by Mr. Randall, her chief officer, startled them from their fancied security; for up to that time the pirates had either not observed the boats, or thought they would not have the temerity to attack them. In this, however, they soon discovered their mistake, for the boats, which at first had made for a narrow neck of land, bore up for and rounded the point, and then, from the deck of the steamer, was witnessed as bold an attack as was ever made in these waters.

The pirate fleet formed a dense mass, the larger and heavier armed junks bringing up the rear, every now and then yawing round and firing their broadsides at the boats, from which, in reply, tiny puffs of smoke arose, as the howitzers, in their bows, discharged their more deadly contents, the shrapnell bursting over their junks, and making frightful havoc among their crews. The boats soon neared the pirates. Lieutenants Pegram and Rolando, with the launches of the Powhattan, first by volleys of musketry, clearing the decks of the two largest, then boarding and driving the pirates overboard at the point of the bayonet. This however was not done without a hard struggle, for the miscreants fought with the fury of despair; but they had, of course, no chance against the marines and blue-jackets. Meanwhile, the other boats were far from idle, and though small in comparison with the launches, performed their share of the work with the utmost gallantry, officers and men vieing with each other for the post of danger and honor, so that five or six more junks were soon secured. Mr. James, the boatswain of the Rattler, particularly distinguishing himself, having with five seamen and a few marines, in a whale-boat, dignified by the title of second cutter, boarded and carried a junk that seemed fully a match for either of the launches. Lieutenant Pegram, in the first launch, was hastening to their assistance, but seeing the battle nearly won, would not interfere with their well-earned laurels, and turned his attention elsewhere. The pirate chief's junk, after being shelled by the first launch, was boarded almost simultaneously by her crew and that of the Rattler's gig, and Captain Fellowes was fortunate enough to secure the chief's flag. The chief himself, Lee Afye, a principal leader of the Whampoa "patriots," was shot by an English marine, who had jumped on deck from the Powhattan's launch, and four women threw themselves overboard and were drowned. The ammunition on board the pirate fleet may be judged of, from the fact that this junk alone is believed to have had nearly 100 kegs of English gunpowder, besides stinkpots, cartridges, and loose powder.

Up to this time only one serious casualty had happened to the attacking force, a young American marine, named Adamson, having been shot with a musket-ball in the groin; but two other fatal accidents followed in quick succession. The Rattler's first cutter, in charge of Paymaster Brownsdon, ran alongside of a large junk. Several stinkpots thrown at them missed;

but, at last, one hove at them from the raised poop of the pirate, by a woman with a child slung to her back, fell into the boat, and being followed by others, the crew were compelled to jump overboard, when two were speared and a third was wounded and drowned. One of these, a marine, who had been wounded by a spear thrust, called to his comrade to save him; and the other, being an excellent swimmer, got hold of him for that purpose. The Chinese then threw a mat over them, and the marine, still holding on by his wounded friend, dived below and came up clear of the mat; but as soon as he was observed, several stinkpots were pitched at him, one of which struck him on the head, and though not much hurt, he was stunned for a second or two, and lost sight of the man he had displayed such a determination to save: the brave fellow's name is Wm. Robinson. The other fatal accident was the blowing up of a junk, which, for a time, had offered the most determined resistance to the gig, in which were Captain Fellowes and Assistant-Surgeon Wilson, with five men, but which was ultimately taken possession of by Lietenant Rolando and his launch.

Either a train had been laid before they left, or some determined scoundrel fired the junk, for she blew up with a tremendous explosion, and both officers and men were hurled into the water. Three of the men were killed, and several others frightfully scorched, one of whom died the same night, while another is not expected to live; but the officers miraculously escaped, though Lieutenant Rolando was burnt, and Captain Fellowes injured by the falling spars. The survivors were, however, all picked up by Mr. Craig, master's mate, of the Powhattan, who had luckily gone into the boat the moment before the explosion took place. In this junk was an immense quantity of treasure, said to amount to $200,000; and the desperation with which her crew fought, may be judged of from the fact, that even after the Americans gained the deck, they were encountered hand to hand. One man made himself particularly conspicuous, and notwithstanding several women continued to throw stinkpots, ultimately ran below, and is believed to have fired the train which blew up the vessel.

The time thus occupied in securing the larger junks enabled 16 smaller ones to get so far ahead as to render pursuit hopeless; while, but for the unfortunate absence of the pinnace and cutter, as above mentioned, the whole would have been, probably, captured. The men in their boats tugged manfully at the oars, and pulled a distance of fifteen miles in three hours; but, notwithstanding their utmost endeavors, arrived too late to take part in the fight, though they assisted in destroying the captured junks, while the other boats returned with their wounded men to the Eaglet. There, Dr. Pritchard, with Pine, the gunner, was prepared to receive them, and everything was done by the three surgeons, (Pritchard, Schriver, and Wilson) that humanity could devise, or medical skill perform.

Ten junks were destroyed, five of which, more than ordinarily, deserve

notice. They were built of the most substantial materials, evidently for war purposes, as they differed in many respects from the common trading junks. They carried very large guns, 32, 24, and 12-pounders; a 68-pounder was found in one of them. Another had no less than 21 guns mounted, the weight of one of which, carrying only an 18-pound shot, was estimated at not less than 50 cwt.

Two lorchas and seven junks, that had been detained by the pirates, were released, two of which, however, had to be burnt, to prevent their falling again into the hands of the piratical junks that escaped; time and adverse wind and tide not allowing them to be brought away.

The officers employed estimate the number of guns taken at 200, large and small, and the pirates, at 1000, 500 of whom were killed. Both parties unite in extolling the coolness and intrepidity of their leader, Captain Fellowes; but in paying a merited tribute to the gallantry of all the officers and men concerned in the bloody affray, we must not forget Captain (late General Interpreter and Police Superintendent) Caldwell, without whom the expedition would, to a certainty, have proved a bootless one, and who, by voluntarily tendering the use of his steamer to accompany the expedition, has laid the public under another obligation. We shall really be astonished if on this, as on other occasions, his services are allowed to pass unnoticed; for we cannot bring ourselves to believe that government will be mean enough to accept such service gratuitously from one they have already treated shabbily, and to their own injury.

The following are the names of the officers engaged, with a list of the killed and wounded.

OFFICERS IN THE BOATS.

British.—Commander, W. A. Fellowes; Lieutenants, C. I. Wrey and T. H. Greer; Paymaster, R. Brounsdon; Assistant Surgeon, T. Wilson; Mate, G. G. Lomax.

Americans.—Lieutenants, R. B. Pegram; H. Rolando, and I. H. Jones, U. S. M.; Master, E. Y. McCauley; Assistant Surgeon, A. Schriver; Assistant Engineer, M. Kellogg; Master's Mate, S. R. Craig; Boatswain, G. Bailey.

KILLED AND WOUNDED.

Killed, British.—John Massey, Gunner, R. M. A.; James Silver, Carpenter's Crew; Geo. Mitchell, A. B.; Wm. Oliff, Private, R. M., (missing).

American.—Joseph A. Halsey and Isaac Coe, Landsmen.

Wounded, British.—John Lindsey, Gunner, R. M. A.; David Lloyd, R. M. A., burnt severely; Richard Clark, Stoker, slightly wounded and burnt; James Poulter, A. B., John Eady, A. B., burnt severely; James Paul, boy, burnt badly; Wm. Robinson Gunner, R. M. A., contused head.

American.—Lieut. R. B. Pegram, contusion of hand; Lieutenant H. Rolando, burn of hand; John Pepper, Seaman, mortally, (since dead); Benjamin Adamson, Marine, gunshot, mortally, (since dead); Jeremiah Pendergrast, Landsman, fracture of left clavicle, and burns; Samuel Mullard, Marine, burnt dangerously; Frederick Hommell, Marine, burnt very severely; Washington Cames, Seaman, burnt severely; P. Walderschmidt, Marine, burnt severely; Joshua Lewis, Seaman, burnt severely; Wm. Taylor, Captain After Guard, burnt severely; Charles Pingwell, Seaman, cutlass-wound.

THE SHIP AND THE SAILOR.

FROM a chapter on AIR, in a work preparing for the press by Dr. A. N. Bell, late P. A. Surgeon in the U. S. Navy, we are permitted to publish the following well-timed extract:

Pure air is the great disinfecting agent in nature, tending constantly to dilute and remove all pernicious emanations, from whatever source, and in proportion as we confine or restrain it, do we generate and foster disease. No truer maxim can be promulgated, than that the want of purity is the want of health. Malaria, or bad air, is always an extraneous production, and its noxious effects arise from being in such a state as to be readily removable by a sufficient quantity of pure air, which, were it fully and constantly accessible, would altogether prevent any such noxious emanations. Free and effectual ventilation, then, wholly consists in the free access of pure air, and whatever of the many contrivances that do not have this for their aim and end, are proportionately ineffectual and worse than useless. And here I add a few words specially applicable to men-of-war, and some merchant ships, with the full expectation of its being looked upon with the same contempt and hatred of all innovations as usually characterize an obstinate and superstitious attachment to the "customs of the service." Free access of air and light, and a wholesome supply of water, being still as great an abomination as in the days of Anson, "when a ship is a prison with the chance of being drowned; it is worse—worse in every respect—worse air, worse food, worse company."

The use, or rather uselessness of the windsail is peculiar. It is air, though it be perfectly calm; and if it conducts a gale on the thin covering of some poor fellow's ribs, he must take it at the risk of pleurisy when he wakes. It is a perfect blower on the mess-table during dinner hour, and death on lights for supper. On the coast of Africa, or other tropical latitudes as bad, the thermometer at 80°, in a three months' rain—and it may be in a

brig where there are no air-ports, or if there are they are not larger than bull's eyes, and cannot be opened—the windsail has to come down and knock under to a thick tarpauling, drawn tightly over the only breathing-hole, the hatchway. Or if there is a gale, all of those whom duty does not call on deck must be battened in during the pleasure of the officer of the deck. Once remonstrating with an officer thus conscientiously discharging his duty, he assigned as a reason that the damp air conducted by the windsail in rainy or misty weather, was more injurious than the confined air of the berth-deck! It had not been in the line of his duty to discover that dampness and other deleterious qualities are exhaled from the skin and lungs of individuals, which, in close apartments, become far more injurious than the free access of air, not only when saturated with moisture, but even when deluged with a tropical rain.

But it is frequently impracticable to make use of the windsail, from other causes consistent with the working of the ship, whereas ventilation should be at all times practicable, and daily; and it is not only necessary for living beings, but of great service in preserving the ship and various kinds of cargoes. There are a number of contrivances, of but little cost, and of as perfect adaptation to men-of-war as to the merchant ship, which answer all desirable purposes, and considering the effects of long stowage of men-of-war, compared with merchantmen, are doubly necessary. A light spar-deck on sloops of war, under which hammocks should be slung instead of the berth-deck, would secure a free circulation through the air-ports and hatchways, which could usually be kept open, materially contributing to the health of the ship's company.

WATER is the next great natural agent to keep us pure, both without and within, and in all times and places it has been so regarded. Yet it may be in the trade winds and extremely rainy, so that the water-tanks can be filled as fast as they are empty, notwithstanding, each man is still limited to the maximum quantity of one gallon, and sometimes to half that only for his drinking, cooking, and washing purposes. In Anson's voyage, where more than half died, each man had five pints.

It is impossible for those who have never felt it, to appreciate the want of water; a necessity to health and life so abundantly supplied us by nature, to be denied or curtailed by the improvidence of those to whose special care we may be committed, is worse than negligence, and should be made a criminal offence.

A ship should be, and if well-ventilated is, the most healthy of abodes; yet we are continually appalled by the rise, spread, and fatality of diseases on board, which even the most ordinary care would wholly avert. Persons on board ship are more at the mercy of those who regulate and control it, than are the criminals of a penitentiary to the turnkey. Hence, so long as

captains and ship-masters are no better than other men, circumstances sometimes arise in which they need a common master, who has an equal regard for the health and lives of all.

The English Government has adopted an effectual plan for the proper care of convicts in transportation, by determining to pay the passage money of only such as are safely landed, which has reduced the mortality on arrival, from ten to one and a half per cent! Interest is usually a powerful appeal, but there are some captains whose interest scarcely extends beyond the nuisances of pig-pens and chicken-coops, which are more to them than the comfort and health of the ship's crew. Maritime law makes the expenses of medical advice and treatment chargeable to the ship, from the captain to the lowest in rate, and extends the obligation to persons put on shore from sickness for the convenience of the ship, and in this case includes all necessary expenses, board, medicine, attendance, &c. Furthermore, the ship is chargeable with any sickness or injury sustained in her service, yet there is no law bearing on her sanitary condition—for the preservation of health it imposes no obligation. A ship may be built and sent to sea with no opening save the hatchway, so that when it is closed, there is no light nor means of renewing the air. The forecastle where the sailors sleep, in small vessels especially, is rarely ever high enough to admit of an erect posture, and from its position, even in moderate weather, it is frequently necessary to close it, while with the greatest care it is usually subject to being wet. Common sense would seem to dictate that a floating building would require special adaptation to cleanliness, but here everything appears to be in harmony with filthiness. In stagnant harbors they soak in the drainage of towns, until not unfrequently, putrid mud collects between the timbers, which generates or holds in reserve the seeds of disease, ready at all times to break forth with violence commensurate with the atmospheric conditions favorable to its development. I was not long ago on board an American whaling brig, in a foreign port, to see the Captain, who was sick, where twelve out of a crew of nineteen men had lately died of ship fever, from such causes as are here described, while he was abusing the filthiness of the town and the sickliness of the port.

Confining the above remarks to ordinary merchant vessels is but a small part of the evil. Emigrant ships are said to be of better condition, and so they are if they were used for the same purposes, but their superiority by no means compares with their increased necessity for it. Many of the new ones have what all should—ventilating tubes, by which fresh air has free access in every part, with as much light as the size of the ship will admit of, and captains who are careful to have the passengers on deck as much as possible, and the apartments well cleansed daily. Such are uniformly healthy. But there are others with no ample provision for anything, excepting disease and death. Men, women, and children, of all ages and

habits, without light, without pure air, with poor food, never properly cooked, scarcely water enough for eating and drinking purposes, and none whatever for cleanliness, the old and young of both sexes with no proper sleeping apartments, but only close, cramped berths, which will scarcely admit of change of position—boxes, bags, barrels, and bundles piled up between them, never moved nor cleansed, from port to port, covered with the filth and abominations of hundreds of sea-sick, dispirited, and disgusted poor people, who make this their bed of death, is but a fair description of some of the emigrant ships frequently entering our ports. By request of the doctor I have visited such a ship to see the sick. After descending to her third and lowest deck, I followed him to the fan-shaped berths, close up in the bow, to look at some sick children, among whom were two dead. I did not stay long enough to count the living. It was scarlet fever. This ship's voyage was not yet half completed, and she was from Liverpool bound to Australia!

Much has been done for regulating the structure and management of emigrant ships, limiting the number of passengers, requiring wholesome food &c., the carrying out of which is wholly incompatible with the dreadful mortality that frequently infests them, while the weakly constitutions which characterize many young sailors from occupying the pestiferous sinks—the forecastles of small vessels in their first service on our coasts and rivers—is but a fit beginning of an apprenticeship to the systematic grog drinking which constitutes part of the routine of a man-o'-war.

The cultivation of a maritime taste requires that the allurements should be of an enticing character, while it is as equally necessary that adaptability to the sailor's life should be vested in the person seeking it as to any other livelihood; for to succeed well in any profession, one should start with such predilection for it, as will tend to raise it superior in the pursuer's mind to all other avocations.

What then should be the inducements to the sailor's life? It is not enough that he should be in good health, and of the strongest physical constitution, that he is full of energy, and in short that he has all the attributes equal to the surest success in any other profession. He has to estrange his affections from the strongest instinctive sentiments. The pleasures and enjoyments of the domestic hearth, of a family—all the sweets of a uniform and peaceable existence, sustain in him different relations from all other pursuits. He has to become naturalized to new elements, requiring additional and different codes of laws for both his physical and rational being, and so becomes more a man in all his privileges and associations. On the land he possesses all inalienable rights with his fellow landsmen. But it is with the sea he has to dispute his existence, and in proportion as he habituates himself to it, all smaller competitors and enemies sink even below their proper level, and no privations, rigors, nor trials, are too great for him to surmount.

The sailor alone departs from the habitude in which nature placed him, and his is the most difficult of all arts. All other animals occupy the sphere for which they were created and designed, but the mariner is an exception to the whole province of adaptability. The land is the domain of man, and to it his organs are suited; to subjugate it to his use is therefore only to obey his natural inclination. But on the sea he takes the widest possible departure, changes the whole bent of his inclinations, and subjects all things else thereunto. Sensations fill the mind of him who consecrates himself to such a life, which create wholly new contemplations. He begins his existence anew, contracts a new bond of affection, and enters upon the world no longer confined in the limits of his fathers, seeks new countries and new men, but always the sea. His affections assimilate themselves with the imposing majesty of the sea which surrounds him, and he knows no limits of comparison less than the incomparable grandeur of his contending foe. If he becomes brusk, it is because his now native element is so. He has no hypocrisy, and true humanity and kindness are no strangers to his bosom. Fear he knows not, and to brook an injury from a stranger or an equal, is to be no sailor. He would rather be wanting of a name than not deserve one. My COUNTRY is his boasted ancestor, and nothing so soon excites his brave ardor as the prospect of danger. Exempt from prejudice, frank, and prodigal to a fault—no one so soon as he drowns the small passions and cold interests of men in the sea of forgetfulness.

APPLIANCES FOR BUILDING, MANAGING, OR TRANSPORTING VESSELS.

WE are glad to witness a spirit of rivalry among those who furnish the appliances for working vessels with ease. The time has come when the mechanic and nautical man must seek the aid of genius to assist both in constructing and navigating vessels, and it is not enough to know that we have an increase in the number of these facilities; but that this competition tends to perfect the manner of construction as well as the material of which made, our attention was attracted at the late exhibition by the neatness and symmetry developed in the jack-screws of Mr. Ballard, and in the variety of ships' capstans and windlasses on exhibition, those patent, double-acting of Jackson's, with his side winches and anchor stoppers, were the best of the kind. We also saw Brown's patent chain-cable, bow and deck pipe stoppers, the agency for which, in this country, is vested in Captain Skiddy. All these appliances are comparatively new, and bespeak an improvement worthy of the age, having a tendency to mitigate the labors of mechanism and soften the hardships of seamen.

SHIP-BUILDING ON THE LAKES.

BUFFALO, Oct. 11, 1855.

MESSRS. GRIFFITHS & BATES:—

GENTLEMEN—Below I send you a list of vessels which have been launched vatarious points on the lakes during the present season, with their names, tonnage, and where built. It may prove interesting to some of your readers engaged in ship-building on the lakes. The list, so far as it goes, is correct, with, perhaps, the exception that the amount of tonnage set opposite the names of some of the vessels may be over or under the exact figures, as I obtained their dimensions before they were measured by the Custom-House Inspectors. There are also, doubtless, some omissions. There are still a large number of vessels now on the stocks, at various points, which will be launched in season for the fall trade.

Yours truly,

JOHN J. HENDERSON.

Class.	Name.	Tons.	Where Built.
Steamer	Canada, (Br)	1,000	Niagara.
"	America (Br)	1,000	Niagara.
"	Sebastopol	800	Cleveland.
"	Planet	1,153	Newport.
"	Island Queen	175	Kelly's Island.
"	Union	115	Pt. Huron.
"	James Carson	175	Cleveland.
"	——	110	Grand Rapids.
Propellor	Chicago	770	Buffalo.
"	T. U. Bradbury	546	Cleveland.
"	Jersey City	634	Cleveland.
"	Old Concord	379	Newport.
"	Mary Stewart	442	Newport.
"	Potomac	814	Cleveland.
"	Relief	420	Buffalo.
"	Rescue	285	Buffalo.
"	Sion	150	Detroit.
"	Dime	47	Buffalo.
"	Mary Bell	75	Buffalo.
"	Dan Rhodes	75	Cleveland.
Barque	L. M. Hubby	398	Cleveland.
"	Lemuel Crawford	461	Black River.
"	Thos. F. Parks (Br)	370	Malden.
"	John Sweeney	406	Buffalo.
"	Reindeer	474	Georgian Bay.
"	E. C. L.	342	Chicago.
Brig	Canopus	379	Huron.
"	Ocean Eagle	282	Oswego.
"	B. F. Gardner	425	Sheboygan.
Schooner	Thos. Y. Avery	350	Oswego.
"	Andes	298	Milan.
"	Africa	254	Vermillion.
"	Ayr (B)	363	Pt. Dalhousie.
"	Antelope	327	Buffalo.
"	Adda	273	Milwaukie.

Class.	Name.	Tons.	Where Built.
Schooner	M. Ballard	287	Cleveland.
"	General Boone	231	Milan.
"	Barbarian	357	Oswego.
"	C. E. Bailey	121	Madison Dock.
"	Wm. Case	378	Cleveland.
"	Charlotte	156	Sheboygan.
"	Oliver Culver	392	Charlotte.
"	Col. Cook	327	Newport.
"	Contest	347	Buffalo.
"	J. H. Drake	350	Black River.
"	Enterprize	296	Buffalo.
"	Fanny and Floy	143	Milwaukie.
"	Geneva	197	Buffalo.
"	Golden Harvest	376	Buffalo.
"	E. K. Gilbert	162	St. Clair.
"	C. Harrison	187	Milwaukie.
"	Hellewell (Br)	464	St. Catherine's.
"	Hunter	173	Milan.
"	Hanover	343	Cleveland.
"	A. Handy	342	Cleveland.
"	Indus	246	Milwaukie.
"	J. M. Jones	156	Milwaukie.
"	Jessey (Br)	421	Niagara.
"	Live Oak	219	Huron.
"	Lark	388	Cleveland.
"	Lookout	313	Buffalo.
"	May Queen	246	Milwaukie.
"	J. P. Mack (Br)	216	Pt. Bruce.
"	Mary and Luck	91	Cleveland.
"	New Lisbon	239	Ashtabula.
"	Perseverance	294	Buffalo.
"	Queen City	378	Vermillion.
"	C. J. Reider	174	Vermillion.
"	Reciprocity	315	Detroit.
"	Matt Root	387	Fairport.
"	Dean Richmond	373	Cleveland.
"	Sebastopol	295	Milan.
"	L. B. Shepard	290	Buffalo.
"	Gerrit Smith	350	Buffalo.
"	Charles Sumner	155	Detroit.
"	W. H. Stevens	299	Cleveland.
"	Theresa (Br)	380	St. Catherine's.
"	David Todd	373	Cleveland.
"	Undine	100	Milwaukie.
"	J. F. Warner	342	Cleveland.
"	Yorktown	371	Cleveland.
"	Mozelle	331	Buffalo.
"	Rainbow	343	Buffalo.
"	Yankee Blade	350	Buffalo.
"	Collingwood	379	Buffalo.
"	Kate Richmond	300	Cleveland.
"	Wild Rover	290	Milan.
"	Medbury	226	Milan.
"	J. P. Kirtland	360	Milan.
"	Darien	350	Milan.
"	J. W. Sargent	230	Racine.
"	Quickstep	270	Saginaw.
"	Altair	412	Buffalo.
"	Grapeshot	370	Buffalo.
"	D. B. Sexton	340	Cleveland.
"	Allies (Br)	550	Oshawa.

Class.	Name.	Tons.	Where Built.
Schooner	Onward	370	Sacket's Harbor.
"	Gertrude	360	Cleveland.
"	Lucy J. Latham	330	Milan.
"	George Steele	350	Three-Mile-Bay.
"	Cuyahoga	330	Cleveland.
"	Wm. Lewis	370	Oswego.
"	E. S. J. Bemis	300	Milan.
"	Convoy	412	Buffalo.
"	C. L. Abell	64	Buffalo.
"	J. F. Tracy	175	Buffalo.
"	Bay State	344	Buffalo.
"	Eliza Wilson (Br)		Pt. Nelson.
"	Free Mason	150	Green Bay.
"	North Star	208	Manitowoc.
"	R. H. Harmon	350	Cleveland.
"	Augusta	350	Oswego.
"	Crusader	—	Charlotte.
"	Caledonian, 3-master	—	——
"	Harvest Home	312	Cleveland.
"	S. W. Nelson	387	Cleveland.
"	Louisa Chickluna (B)	400	Niagara.
"	North Cape	220	Milwaukie.
"	Ann Tarine	85	Manitowoc.
"	Andrew Stevens (B)	320	Hamilton.
"	D. L. Couch	170	Oswego.
"	Enterprize	120	Sheboygan.
"	Alma (B)	225	Pt. Sarnia.
"	Sam J. Holly	296	Milan.
"	W. G. Grant	357	Cleveland.
"	Planet	198	Black River.
"	Ellen Williams	380	Cleveland.
"	G. W. Van Buskirk	103	Buffalo.
Ship	City of Toronto	500	Toronto.
Scow	Sea Star	120	Irving, N. Y.

THE FLEXIBILITY OF VESSELS.

So much has been said about the strength of ships, that we are inclined to believe that it is our duty, as journalists, to call the attention of the commercial world to the true principles of obtaining strength in vessels; or, in other words, to show, that what is so often regarded as the bulwark of strength in ships, is not unfrequently not only the cause of their flexibility, but often of shipwreck; and this mal-construction is not confined exclusively to merchant vessels. It is to be regretted, that there has been so little knowledge imparted upon those mechanical problems in maritime construction, which are so intimately connected with the safety of human life. If this subject, like many others, were *only* a question of *time* and *money*, we would scarcely regard with wonder the dullness of comprehension of many of those whose lives are jeopardized by the customs of a barbarous age, which yet remain interwoven with the art of constructing vessels.

In the strength of our ships is involved the lives of thousands of our

confiding seamen and unsuspecting oceanic travellers. What the world denominates experience in ship-building, (strange as it may appear), is but the continued use of preconceived notions, many of which have not a particle of that material which forms the basis of philosophy in mechanism, as (we may safely say, and without vanity,) we shall fully prove to the readers of the U. S. NAUTICAL MAGAZINE, if they will but digest the truths as they read them. Among the most prominent of these crude notions, is that which teaches that a vessel is strong in proportion to the size and weight of her frame. This monstrous absurdity is not confined to the looker-on in maritime construction, but may be found among ship-builders and nautical men. The weight of a vessel's frame makes up a very large proportion of its entire weight, and it requires but a moment's reflection from a comprehensive mind, of mechanical complexion, to discover that *the more bulky and weiyhty the frame*, (other parts remaining without change,) *the weaker the vessel.* In order to illustrate this, it may be necessary to assume that the thickness of planking and ceiling were added to the scantling size of an ordinary framed ship, the sides and bottom having the same thickness of frame that they ordinarily have in the planking frame and ceiling; we will carry this increase of transverse material still farther, in order that the arrangement may be fully matured, and make the keel and keelson of transverse sections, of the same siding size and depth as before, and use an equal weight of fastening material to secure the frame and keel, as also the keelson, in their appropriate places. Thus secured and proportioned, having an equal amount of weight, as well as of bulk, and thickness of side and bottom, it may not be improper to inquire how much, or what proportion of strength we have secured? and lest we should be of necessity compelled to pause long for a reply, we will answer our own question, and inform the reader that such a vessel, so constructed, would not bear launching, and would become disjointed before going to sea. But it may be said that we have proposed dispensing with the planking and ceiling, and even the keel. Very true, but we have the weight and bulk, as well as the thickness—in other words, we have a "large frame," and is not that enough? But we will apply this rule the other way—for this is one of the rules that will work both ways—and then it will be seen that we have dealt fairly. Suppose we build the vessel of timber running in a longitudinal direction, or in other words, that we make her *all plank instead of all frame*, keeping the same weight, bulk or thickness, with the fastening also as before, and the usual strapping which was placed in flat plates on the inside of the frame, may now be reduced in weight one half, and placed in round iron on the outside of the planking, which being sheathed with three inch plank, make up the required thickness—how much stronger, we inquire, would such vessel be? or how much stronger than they now are would they be remember with less weight of strapping by one half? Where is the man

whether mechanical, nautical, or commercial, who does not see that the strength of a vessel does not lie in the size of her frame.

No one at all familiar with the construction would hesitate to say that she would be much stronger; hence we see that the strength of a ship does not consist in the siding or scantling size of her frame, inasmuch as the frame can be dispensed with altogether, and the strength of the vessel be fully maintained. Longitudinal strength is of the greatest consequence to every vessel; and when the thinking mechanic or nautical man reflects that while he is adopting extraordinary means for maintaining the rigidity of the sides, he is leaving the middle uncared for, he must, if he is a man of the age, discover a great want of strength along the line of the vessel's keel. The sides, which have but a small proportion of the cargo to sustain, have the planking both inside and outside edgewise, the entire depth of the vessel, which, in itself, is of much consequence, and in addition to this the frame is plated, and the deck frame and knees in their connection with the side, add still more to the superabundance, while the middle, upon which the bulk of the cargo rests for its chief support, is from the keel and keelson, both of which, if suspended in a horizontal position by the ends, would not sustain their own weight, no one will say that there is any longitudinal strength in frame or in its crossing the keel, and yet at this point the frame is larger and the plank thinner than elsewhere; nor will it be assumed that the plank or ceiling of the bottom, in its position flatwise, affords any considerable amount of strength; the sister keelsons, being but an auxiliary, can of themselves afford but little aid, hence we are furnished with a better reason than is generally given for the hogging, which is so often charged to the captain's improper stowage of cargo, when it really belongs to the mode of construction. We have been often surprised to see so much attention paid to the size of the stanchions in the lower hold and between decks, and to the size and number of knees in connection with the stanchions, keelson, and beams, as though the decks were in possession of a surplus of strength, and could assist the bottom. We can discover no just reason for this, unless it be to hide from public gaze the opening that there would otherwise be, either at the head or keel of the stanchions in the hold, after discharging the first freight of railroad iron. It is surprising, indeed, that underwriters have never yet made this discovery in the longitudinal weakness of merchant vessels. With regard to any increase in the siding or scantling size of the frame, we should remember that in the same ratio in which the transverse area of the frame is increased, the area of the butts of the frame are also increased; hence we see that the weakness of wooden vessels, without mixture of iron, follows us like our shadow and cannot be cast aside. Our only alternative, then, is to adopt a more mixed construction of iron with wood, the advantages of which commend themselves to ship-owners and underwriters, as well as to ship-masters. We are then brought to the most

simple remedy for this intrinsic weakness longitudinally, without increasing either the bulk or weight, and transversely, without discommoding the stowage of cargo, by adopting which, we add to the security of vessel, passengers, and crew, inasmuch as she is in every sense a life-boat, secure against the fatal consequences of collision. And were Congress to so amend the act of 1852, in reference to "the better security of life on steamers," they would confer a lasting benefit on the world. We therefore propose the following amendment to the steam-vessel act of 1852:

That section nine, duty the first, be amended, by adding after the words, "are faithfully complied with," and before the words, "and if they deem it expedient," the following provision, to wit: "And it shall also be their duty to classify all steam passenger vessels into first and second classes, and shall regard as first class such vessels only as shall have their bow and stern divided from the midship section of hold by transverse, water-tight bulkheads of plate iron, and be so strengthened longitudinally, by an iron keelson, that in case of a rupture in the bow by collision, a succeeding rupture in the midship section may not be dreaded, and that this keelson being hollow, shall be used as a ventilator for the vessel; and in each section such connection of pumps shall be made as will enable the entire pumping force of the vessel to be applied to either of said compartments whenever necessary. *Provided*, that all new steam vessels hereafter built with reference to the carriage of passengers or the mails, shall be made first class, according to the requirements of this act." So much for the assistance of law to add security to human life. Such amendment would do more for the safety of life at sea, that all the life-boats which have yet been built, inasmuch as it would make the ship all and much more than can be obtained from boats.

As it regards the strength of ships, we compromise much of the strength, while we increase the weight and cost, by plating the frame on the inside. The time will come when a ship-builder would as soon think of plating the frame of a vessel on the inside, as a cooper would think of hooping his casks on the inside. It requires but a moment's reflection to discover that the hoops on the outside would be insufficient to furnish a tithe of the strength they now furnish, either as fastening or hooping, if applied to the inside of a cask. The simile may be applied with equal propriety to the ship, and if we but reduce the scantling of a vessel's frame, and increase the thickness of the planking, and upon this planking strap the vessel with round iron, and sheath over the strapping, we would realize that we had a stronger, lighter, and consequently a more burdensome vessel, and with less cost than by the present mode of construction.

IMPORTANT DISCOVERY FOR OVERCOMING LOCAL ATTRACTION IN SHIPS.

The following article, from the pen of a valued correspondent, deserves, and doubtless will receive, the attention of Ship-owners and Nautical-men. The subject commends itself to the attention of every philanthropist.

To the Editors of the Nautical Magazine:

Dear Sirs:—Much precious time, a sea of ink, and many pages of type, have been wasted on the safety of ships, with their living and their inanimate freight.

Your proposition to make the ship a life-ship—invulnerable, as far as possible, to collisions, and to fire and water, to any dangerous degree, is no doubt the true thing; but human nature is peculiarly perverse where, to insure immunity from the dangers of the sea the cost in money is large. Therefore, ships and steamers will continue to be built of wood, without compartments, for the reason, that "they cannot, without difficulty, be built perfectly tight; a plank *may be* ripped up passing by the bulkheads, and so the ship *may* fill, in spite of pumps and of bulkheads."

With equal reason one might say, we will not build a ship at all, because she may spring a dangerous leak. The fact is, that wood is cheaper in the first cost than iron in this country, and for this reason, ships will, for a long time, be built of wood—and many of them of very poor wood too.

Our attention, then, must be turned to making them as safe as possible; but it must be done cheaply, the low rate of freight, the high rate of wages and the great cost of provisions, with the keen competition of owners, makes it impossible to earn a profit unless great economy is used in the outfits and general management. We would inquire, then, what ought to be done to *insure* safety? The answer is plain, that all the appliances known to art and to science cannot do this effectually; we can only hope to mitigate the dangers of the sea, by adopting such of the helps to safety as may come within the scope of our purses, or such as the law obliges us to adopt.

Supposing the ship to be decently well-built, sufficiently so to entitle her to a long notice in the *Boston Atlas*, she should have main and bilge pumps—the first accessible from the pump-well at all times, without being obliged to lift them; she should have a patent purchase-windlass; a good pair of riding-bitts, separate from the fife-rail on the foremast; a snug forecastle capstan, and a simple and effective chain-stopper.

The forecastle, or habitation for the seamen, should be built principally with reference to their health and comfort, well lighted and well ventilated; this is true economy, to say nothing of the humanity of lodging your seamen at least as well as your horses:—some are put into dark and wet dens, where

cattle could not live. The deck-house, although an ugly excrescence, is, to our notion, much more likely to be healthy than the close under-deck forecastle; it is, at all events, free from the objection of malaria, from the sweat and the bad odors generated by many cargoes.

We say nothing as to the cabins, which are generally sufficiently comfortable for the most fastidious skipper, unless we should say a word on the subject of that false taste, which lavishly wastes on gilding and carving and stained glass, some of the precious money which ought to be put into the essentials—such as pumps, lightning-conductors, steering-gear, rig, and other things, in which a false economy is often practiced.

But this is a digression, and we must go back to the essentials. Anchors and chains are often lamentably light and short; and many fine ships, well gilded and painted, can boast of little safety in an open roadstead, for this reason. Many have only two hawse-holes—all should have three.

In steering-gear we have several kinds that are reliable, and there is little to be said on this subject.

The rope, sails and blocks of most of our modern ships may be said to be good enough, though we could desire that wire rope should be more extensively used. But alas! the first cost, that "interest eating cormorant," is greater. The mode of rigging is perhaps well enough, but is gradually becoming better by the introduction of the new rigs.

All these good things being adopted, the ship, staunch and strong, the hatches well secured, the crew—comprising the requisite number of tarpaulin-hats, sheath-knives, tin-pots and south-westers, furnished also with pursers' protections, goes to sea and stands A 1 on the books.

To our apprehension, several important things are wanting besides the requisite number of American seamen, and it is with the hope of calling attention to these great wants, that we now say a few words on various points.

First in importance is *the compass* (we mean among the inanimate things). It is not largely economising the truth to say, that our fine ships, whose canvas is seen in every part of the globe, are, as a general rule, lamentably amiss in this respect. Not one ship in twenty, among the best of sailing vessels, has good compasses. The makers of mathematical and nautical instruments will tell you, that many first-class ships do not expend as much money to get compasses as they do in gaudy and useless trappings for some particular portion of the cabin; in fact, the useless expenditure far exceeds what is spent on the compass. Steamers running to Europe are better provided in this respect, though the proportion of useless and tasteless finery exceeds the value of the compasses a thousand fold. But supposing that ships are fitted with good compasses, very little or no attention is given to the effect of *local attraction*, which is common in a greater or less degree in all ships, and most common in steamers, and in iron ships is so great that no

reliance can be placed on the best compass. Indeed, the fact that good compasses are constantly subject to the influence of this local attraction, as well as ordinary ones, is perhaps one of the principal reasons why we do not consider the mariner's compass as the reliable instrument that it is cracked up to be. Examine the compasses of ten ships lying at any one of our long wharves, and you will find that no two ships head the same way; they differ from one-quarter of a point to one point and a half.

Start a thousand ships from Sandy Hook to the Equator, for longitude 30 W., let them steer the same course *by their compasses;* in a month, more or less, they would be found, supposing they could have steered nominally the same course, scattered on the equator from 15° W. to 45° W., and thus a splendid table of theories as to the currents of the ocean would be made out. Apart from the notorious want of good seamen to man our ships (and when we say seamen we do not confine ourselves to the forward end of the ship), there is no more prolific source of loss than the want of knowledge as to the effect of, and the remedy for local attraction.

And this brings us to the pith and marrow of this communication.

The remedy for this long prevailing and widely acknowledged curse to the navigator has been discovered; this *discovery* will, ere long, when it becomes more generally known, be classed among the most useful discoveries of the age. It matters not whether the ship be of iron or wood, the means for making her perfectly secure from the effects of local attraction are at hand, at small cost, compared to the cost of those useless trappings before spoken of. We say, in one word, that all ships may be protected from the effects of local attraction at small cost, and without subjecting the ship to any tedious process of swinging and turning.

The discoverer, or inventor of this process, is Captain Griffith Morris, of the iron tow-boat "R. B. Forbes." He has corrected the compass of that vessel, and has proved his corrections to be right *during four years experience*, and after six years of proof before that time, that other methods of correcting the compass by magnets were not to be relied on. Capt. Morris has towed many valuable ships into port and over Nantucket Shoals, and through the Vineyard and Long Island Sounds, during thick weather and dark nights, and thus has established his facts. It is no theory with him, and his corrections have been applied to eight other steamers and to several sailing vessels, from the captains of which, after several months trial, he has the most unequivocal certificates. The beauty of the discovery is, that he makes no table of corrections to confuse the navigator in foggy or dark nights. The correction of the local attraction *is absolute*, so that the compass gives the right course whichever way the ship's head lies.

This matter of local attraction has elicited much discussion among scientific men in Europe, and particularly in England; and the want of confidence in the modes now in use for correcting its effects, has been the principal cause of the abandonment, by the British Government, of iron ships.

It is well known that the compasses of iron ships, corrected in England, have been found to be still more in error in south latitude than they were before the correction.

Capt. Morris supposes that his mode of correcting the error will be equally effective in south latitude, but he cannot be sure of this until further experiments prove the correctness of his theory on this point.

He suggests an important improvement in metallic life-boats for ships, whereby they may be safely navigated by compass, when they may be compelled to leave a foundering ship; they would deserve the name of life-boats under such circumstances much more than they now do. It is a melancholy fact, that a metallic boat cannot be steered by compass at present. The cause of humanity requires that a system should be speedily adopted, in order to make them safer. To do this, the rivetting of the sheets or plates may be so done as to neutralize the effect of local attraction, in a measure; or, in other words, to render them as easy to navigate as a wooden boat, copper-fastened, and thus to make iron boats as safe and as valuable as copper boats.

The heart shudders at the idea of being obliged to embark on the open sea, in a small boat, without a compass! The hapless seaman, who is obliged to do this in an open iron boat, might as well be without a compass as with one where it would not tell the truth.

Iron boats, already constructed, may be rendered quite safe from the effects of local attraction, by Capt. Morris' plan; and not a single hour should be lost before adopting it.

While on the subject of metallic boats, it may not be amiss to say a word about them as "*Life Boats*." And it is well for those who are compelled by law to use them, or those who from motives of interest think fit to adopt them, to pause and to consider what they are about in putting them on board of passenger ships.

What makes Francis' metallic boat a life boat? That is the matter to be considered. The fact of her being of metal? "*Fire-proof*," as the blue-book says—unconsumable—indestructible? Or, is she a "life boat" because she has a water-tight and air-tight tank at each end? Or, because she has a cork-fender on her side? Now, the facts are simply these: and in stating the facts candidly, it must be borne in mind that we were among the first, and are still among those, who recommend and who adopt metallic boats as being superior to wooden boats, for sea-going as well as river and lake vessels. But, in recommending them, we must not forget to point out their defects; especially when we point out how to remedy these defects.

The metallic "Life Boat"—whether built by the Metallic Life Boat Co., originating in Mr. Francis' ingenuity, and bearing his name; or by Lewis Raymond, a modest and well-deserving mechanic of New-York, who does not figure quite so largely—does not deserve the name, so long as the

tank or water-tight compartment constitutes a part of the shell of the boat. It is true, that the cork-fenders or floats on some few of Francis' boats, and the small inside air-cases of Raymonds', help, in some degree, to sustain them when the bow or stern is stove; but, in this event, these auxiliaries to life saving are quite inadequate for the desired end, and the metallic boat which we have been trusting *sinks below the level of the ordinary modern boat,*—that is to say, she *literally goes down,* leaving the crew in a worse condition than they would be in a wooden boat stove in the same place.

It is true that the metallic boat is not so liable to be stove or to break as the other; and in case of staving a hole in the bottom, between the tanks, not likely to happen by boarding, or by leaving a foundering ship, the metallic boat is better than the wooden one, and the hole is more easily repaired by a hammer and topmaul, or a hammer and a stone. The quality of resisting fire, in cases of sudden outbreak of the devouring element, is much overrated, and oftentimes rendered quite nugatory, by suspending the boats to frail pine rails, by hemp or manilla rope! Now, none can doubt for a moment, that a galvanized metal-boat will resist the effects of sun and heat, and be less liable to take fire from the falling sparks than a wooden boat, and she is therefore preferable. But imagine a steamer on fire on the Lakes, or on the Sound, or the North River, the "fire proof" metallic boat is lashed on the white pine hurricane deck, or suspended by ropes to the rail, and surrounded by tinder-like boards: under these circumstances, the passengers and crew must be made fire-proof also, in order to insure the utility of the "life boat." We have now illustrated some of the deficiencies of the metallic boats, and would illustrate the principal one, by asking Capt. Nye of the Arctic, about his experience, alluded to in pages 89 and 90 of the Blue Book of Francis. It is a pity that he did not give Capt. Nye's certificate. We have heard, from a source entitled to credit, that the principal cause of the loss of the metallic boat on that occasion was the fact, that one end was stove, and so her buoyancy was destroyed so far that she floated end up.

Another case of the same kind occurred on the occasion of boarding a ship at sea. We think it was the Winchester, of Boston. One end of the boat was stove against the quarter of the ship; the consequence was, that the men had to escape on board of the sinking ship, and the boat floated off, the after end sustained in an upright position, but deeply immersed.

Now for the remedies. In the first place, all boats should be suspended ready to lower, *by a pendant*—the modern boat by hemp rope, the metallic by a chain or pliable wire rope. Hoist the boat by tackles, as usual, haul tight, and make fast the *pendant,* and unhook the tackles. To lower the boat, it will only be necessary to have a strong cleet for belaying the pendant, and a careful hand to tend it. When the boat reaches the water, or the time comes to let go, the pendants are thrown over, or only the after one, the other being used as a painter. This mode of lowering boats in a sea-

way is much safer than by the tackles, which cannot always be unhooked in a sea-way, Every one who has had much experience in lowering boats at sea, must be aware of the danger of fouling the tackles, and of getting the forward one unhooked too soon, whereby the boat slews round, and fouls the after tackle. Several means have been advised in the British and American navies for safely lowering boats, but the above is the most simple and practical.

In regard to the sustaining power of metallic boats, when stove, there cannot be a doubt but that the end canistery, or tanks, would be much more useful, and only slightly more costly, if a firm bulkhead were built into the boat, at each end, and the spaces before the forward bulkhead, and abaft the other one, be filled to within an inch or so of the outer shell, by a tank entirely separate from the boat, but kept in place by firring off from the sides by cork, or other light substance, and kept down by a well-secured grating, or other simple arrangement.

Under these conditions, if the bow or the stern of the boat be stove by a rough surface, as a spike or a projecting piece of iron or wood, causing the water to enter, the chances are strongly in favor of the boat being still buoyant, as the canister or tank is likely to remain tight, and it can be easily removed to stop the hole when time admits of doing so. As these boats are now built, the smallest hole, unknown till the time of trial comes, will render the end compartment *more than useless*, because it will soon fill to the level of the sea and be a serious obstruction to the safety of the "Life Boat." This separate tank should not fill the space too closely at the most vulnerable point, which is at the upper end of the stem or stern-post. Another important improvement should be made in the bolt or ring which receives the tackle, and the pendant, and the painter. As now constructed, this bolt goes through the stem and stern post in a direct line, fore and aft, weakening at the point most subject to fracture. By breaking off this end under the ship's counter or alongside, the boat gets adrift and the end compartment fills, or partly fills, and the boat is lost. The remedy is simple, and may cost two or three shillings. It is this. Put the strap or bolt, which sustains the ring to which the tackle hooks, in the shape of a flat bar of iron as in whale-boats, running it down a foot or more, and leave a space between it and the tank, so that the breaking of the stem or stern posts by the usual accidents of boarding and towing alongside may only bend the plate which ought to be fastened by two or three bolts, so that one being deranged, the rest may still hold fast the means of hoisting or towing the boat.

Metal thole-pins and metal rowlocks are fruitful sources of trouble in splitting the gunwale by collisions. The best and simplest remedy for this is a grummet of rope secured to the gunwale so as to have just play enough to trail the oar, or a hickory pin and grummet that will break before the

gunwale will break when coming alongside. We do not expect to make boats invulnerable to water or to fire, and must be understood as recommending these fallible appliances as subject to some objections from which the swivel rowlock is free. Francis claims that his boat is stronger, and lighter, and cheaper than a wooden boat of the same size having similar tanks or other buoyant properties. We doubt the correctness as to weight, and are sustained by experience in this doubt. As to cost, a good quarter boat about twenty-two feet long, costs $210 or thereabouts, of galvanized iron, or over $9 50 per running foot. A copper-fastened, first class wooden boat costs, at most, $5 a foot, to which add paint, $10, and we have $120 exclusive of two end tanks which can be put in, of galvanized iron, for about thirty dollars, making the first cost of the wooden boat $150.

It is true, however, that the durability of the metallic boat, and the greater probability of her being tight, renders her the cheapest in the long run.

As to the use of metallic "Life-boats" on the coast of the United States, we cannot say that our experience of them *for surf-boats* is at all favorable to their general adoption. There are some places where such boats can be manned in smooth water, as at Nantucket Harbor, Scituate, Chatham, and some other places, and thence pulled to sea by double banked oars, where they may be most useful and very durable, as also when the surf has gone down and a connection has been established with a wreck, they may be very useful as *large boats*, or to bring on shore numbers of people; but the great difficulty is in launching them when an ordinary surf-boat could be easily got off the beach.

After many years of experience of the men who go down to sea in boats and do business in the waters of Massachusetts, we have come to the conclusion, that the first thing to be done in establishing life-boats on the coast, is to *consult the wishes and sometimes the caprices*, of the beachmen who are expected to go to the rescue, at the risk of life, in time of danger. If they want a frail and light cedar boat, that half-a-dozen men can launch through a surf, by all means provide them with such a boat; and if no objection be made to the weight, put into her, or around her, certain floats, which may be made of cork, or metal, or galvanized india rubber—but it must not be supposed that these floats will take care of themselves, or always be in order. The boat must be light and easily turned by the steering oar, or our beachmen will not trust their lives in her.

We have said enough of life-boats to call attention to their improvement; and we sincerely hope that the slight additional cost of boats with air-tanks will not deter ship-owners from insisting on having them. We cannot consider Francis' or Raymond's boat a tolerably good "life-boat," unless the air-tanks are made as we have had them made—distinct from the boat.

Many valuable suggestions have been made and many valuable buoyant substances have been adopted in England, and large sums have been ex-

pended in premiums for the best "life-boat:" and many competitors have contended for the prizes—no less than 230 (more or less) models of boats are described in the report of the Duke of Northumberland. Some of the best boats have failed in times of danger, and this will always be so while brave men can be found to peril their lives in their efforts to board wrecks.

Most of the English "life-boats"—the well built and well fitted—would be entirely useless to launch from the beaches of Cape Cod and Nantucket, New-Jersey and Long Island, by such means as we can there command.

A large volume might be written on the subject of life-boats, and on the various means for saving life, but the limits of this communication will not admit of further detail. We cannot, however, close without saying one word as to lightning-conductors. Many valuable lives have been lost, and much property, from the effect of electricity at sea; but, since the adoption, during nearly a quarter of a century, of the Harris conductor in the British Navy, the East India Company's service, and in other navies, accidents to ships so fitted are absolutely unknown.

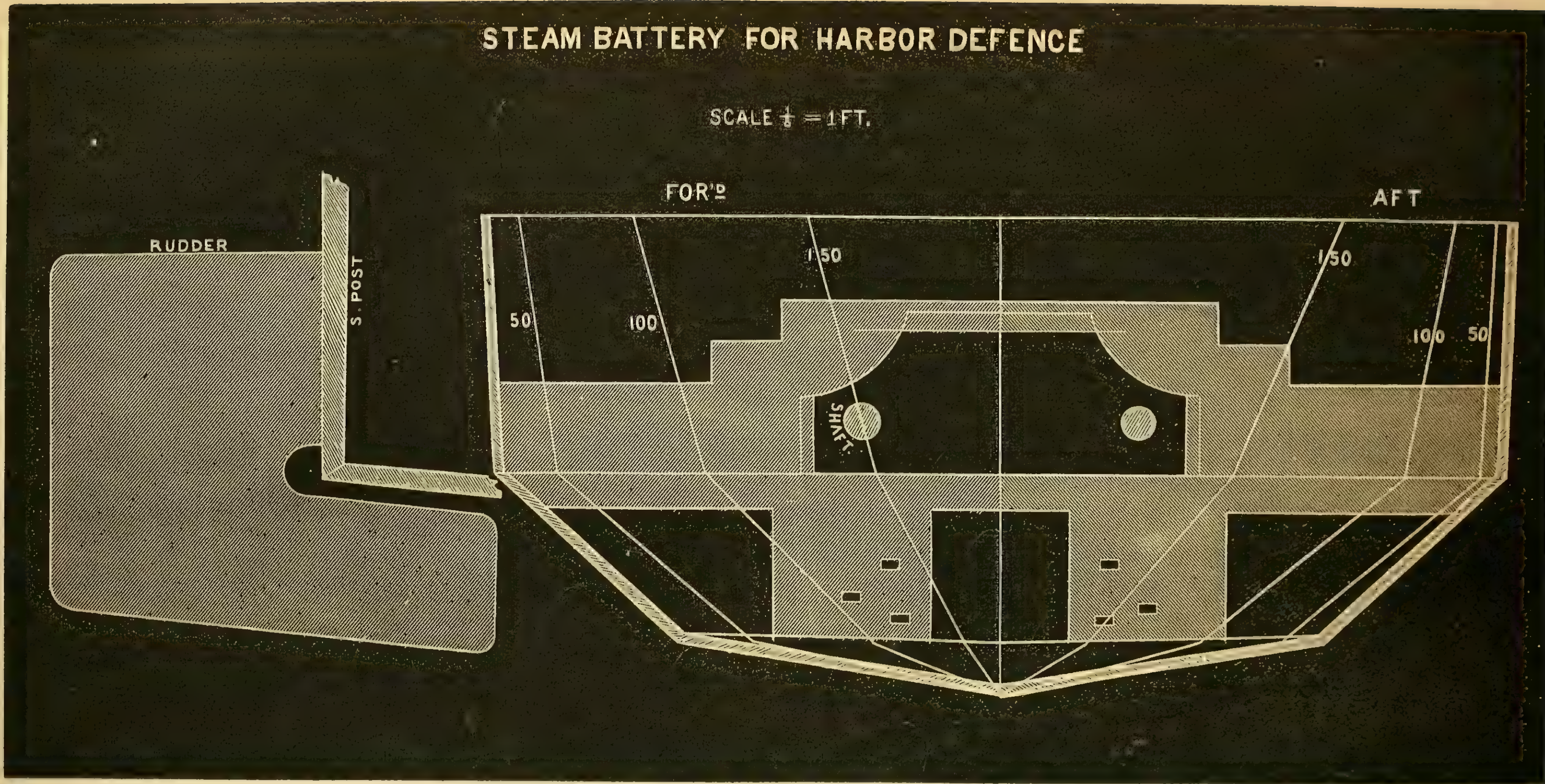
A modification of this conductor has been patented in this country by the writer, which has not only the sanction of Sir W. Snow Harris, but which has also been patented by him in England.

It is hoped that the foregoing plain facts may not be found unpalatable to your readers, and that they may draw attention to the means of making those who travel by sea more secure.

If one life be saved thereby, we shall be satisfied that our time has not been spent in vain.

THE GREAT IRON STEAM BATTERY FOR HARBOR DEFENCE.

At this time, when our citizens are awake to every subject, whether intimately or remotely connected with war, and at the commencement of a session of Congress, we deem the time opportune for furnishing the lines and some descriptive remarks of the vessel announced in the above caption, more particularly as she is designed for the defence of this harbor, and about which an impenetrable drapery of mystery has hung since her commencement. For the last 12 years the public has been led to believe that some great achievement was in progress by Mr. R. L. Stevens at Hoboken, who had succeeded in persuading the government to give him a contract to build a battery of iron for harbor defence, to be both *shot* and *shell* proof, for the construction of which an excavated dry dock was built on the grounds of Mr. Stevens, extending from the coffer-dam at the margin of the river, to nearly the middle, and beneath one of the principal streets; within the enclosure around the adjacent grounds, is a building for the necessary machinery adapted to punching, shearing and drilling the sheets of iron,


STEAM BATTERY FOR HARBOR DEFENCE
SCALE 1/8 = 1 FT.
FOR'D
AFT
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50
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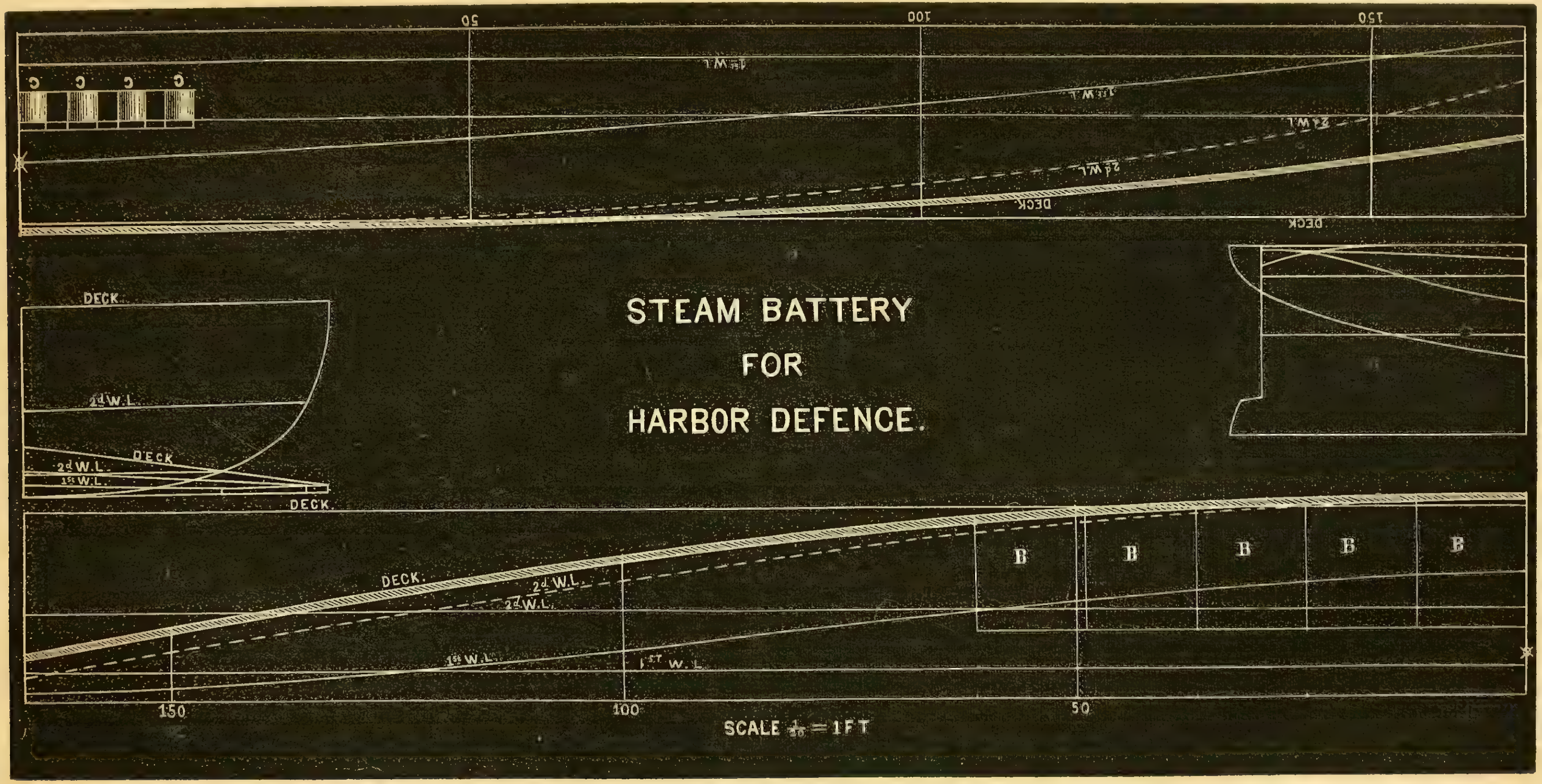

STEAM BATTERY
FOR
HARBOR DEFENCE.
DECK.
2d W.L.
1st W.L.
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B
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with lathes and other tools necessary for a machine-shop, all driven by a steam-engine, besides other necessary buildings of secondary importance. Congress has honored this contract of the government from time to time by appropriating money to carry out its provisions, and Mr. Stevens has been careful to shut out the public gaze, and avoid investigation into the feasibility of his project, by informing the public that the government did not wish him to exhibit his plans. The government, however, has no interest to consult in concealing that of which it is entirely ignorant, Mr. Stevens alone being interested to keep his plans to himself. Thus relieved from public gaze, and from the annoying comments of the press, by being closely incased within a high fence, and partly underground, Mr. Stevens has continued to expend the appropriations of Congress until the vessel is now covered with her outside shell, and sufficiently developed to enable us to judge of the feasibility of the design. Her dimensions are as follows—400 feet long, 45 feet wide and 21 feet deep; she is to be provided with 10 boilers, and 2 propellers driven by 8 engines.

With regard to her being proof against *shot* and *shell*, the plans, as far as developed, fail to convince us that such will be the case. We would hardly be willing to take Mr. Stevens' knowledge of nautical mechanism as a sufficient guarantee for the entire feasibility of his plans, while our familiarity with some of his visionary schemes remains. If proof were wanting, we have but to refer to his last project of supplying a strata of air between the water and bottom of an iron steamboat built for the purpose. A more signal failure has never been witnessed. Ericsson's hot air engine was only a partial failure compared to this. The boat upon which this promised improvement was to be produced is called the John Neilson, and may be seen plying the waters of our harbor as a ferry-boat from this City to New-Brunswick.

In the case refered to, as in most others, it is a matter of no moment but to himself, inasmuch as he made use of his own means; and why he should have departed from his former course with regard to the Battery, we are at a loss to know, for certain it is that he could obtain his own price for the vessel if she proved to be as represented, viz. *shot* and *shell* proof. His plans, however, as far as developed, show unmistakable evidences of doubt to any mechanical mind having a nautical impress. He could have been furnished with much better dimensions for his vessel than he has himself selected. The government having established a precedent, if it shall prove a failure, it will deter Congress from again appropriating money for undeveloped purposes, and thus deprive the government of the benefit of that mechanical genius which is rarely attended with wealth and its consequent influence, and quite as rarely fails to rise superior to every obstacle, when an opportunity is offered.

NEW LINE OF STEAMSHIPS.

CAMERON'S PROPOSED MONTHLY LINE OF STEAMERS BETWEEN AUSTRALIA AND PANAMA.

THE importance of improving the advantages we possess, by extending the blessings of peace which the belligerent powers of the Old World are contracting within narrow limits, induces us to call the attention of capitalists to this great enterprise, one of the most feasible within the range of commercial genius, and, at the same time, we doubt not the most profitable investment. At this time, when war, with all its absorbing interests and dreaded consequences, is holding the pulse and purse of Europe, the people of the United States have the rare opportunity afforded them of reaping a rich harvest, by embarking in this enterprise, which should, and doubtless will, be regarded as a national blessing in its consequences upon commerce, manufactures and agriculture, and a more prolific mine for the development of genius is rarely offered to the American mind. We have only space, in the present issue, to glance at the most prominent facts, among which are as follows: The people of Australia, being suddenly deprived of the advantages of the mail steam packet service between England and her Australian colonies, by the war, have turned to the United States, and, as the result of their investigations, have discovered that the Panama route is not only the most feasible, but, at the same time, the nearest route to England, as well as the United States, and brings New-York closer to Sydney than Southampton, by more than two thousand miles. And when we remember that the population of Australia, New-Zealand, and Van Dieman's Land is nearly one million of souls, or about three times as great as California, and that the gold fields of Victoria are to all appearance inexhaustible, the yearly production of which is set down at sixty millions of dollars; having been greater than even California; and, added to this, another fact, that the amount of imports is very great, the declared value of which into the colony of Victoria, in 1854, is as follows:—

From Great Britain,	£10,942,375
" British Possessions,	4,467,594
" United States,	1,027,598
" Foreign States,	1,221,529
	£17,659,051

The route will be completed by making Tahiti the *entrépot* for the service of the Pacific, and the final station for the Panama steamers, continuing the communication by branch lines to Sydney and Melbourne. The distance

From Sydney to Tahiti is	3,357	miles.
" Tahiti to Panama	4,448	"
" Panama to Navy Bay, (across the Isthmus,)	46	"
" Navy Bay to New-York	1,820	"
Total miles	9,671	

The nearest route from Sydney to Southampton, (England,) is 11,695 miles. Coal is always abundant at Sydney, at $6 per ton, $13 at Tahiti, and $17 at Panama. We doubt not that this line will soon be in process of construction.

TYPES OF TRAVEL IN THE DOMINIONS OF NEPTUNE.

An old cruiser will please accept our thanks for a private journal of spontaneous sketches, which, though never intended for publication, but to alleviate the monotony of calm days and salt grub—

"Recall the far fled spirit of delight."

It was Lord Bacon who said, "It is a strange thing that in sea-voyages where there is nothing to be seen but sky and sea, men should make diaries; but in land travel wherein so much is to be observed, for the most part they omit it as if *chance* were fitter to be registered than *observation*. It did not occur to "my lord" when he wrote this, that life alone is

"Various,
Where the mind of desultory man,
Studious of change and fond of novelty,
May be indulged"—

and that those who travel by sea make diaries not so much with a view to the instruction of others as to their own amusement, and the innocent if not useful employment of time, which were otherwise lost. Reading, writing and study are the only methods of employing leisure hours aboard ship. As the mails do not arrive and depart daily as at home, we have no letters to write, and but for the diary, sea-farers would have little or no use for pen, ink and paper.

Neptune is not wanting in his tutelary charge, and for the benefit of those who would become acquainted with him without entering his dominions, we here furnish a short biography of his Majesty, leaving his character to be appreciated by the detail of our types of travel.

Neptune is the chief of the marine deities and son of Saturn, the most ancient of all the gods. Titan the elder brother of Saturn resigned his birth-right to him on condition that he should destroy all his male issue, that the empire of the world might in time fall to his posterity. This condition Saturn accepted, and Neptune would have suffered the fate of his father's devouring jaws, for he became cannibal in order to fulfil his contract, had not his mother, Orps, secretly intrusted him to the fostering care of the shepherds.

His father was afterwards suspected of not fulfilling his engagement, and was in consequence deposed. Jupiter and Pluto, brothers of Neptune, also

escaped, by some means; and the inference is fair that Saturn was rightly deposed, for his children, and not Titans, eventually inherited the empire of the world; in the division of which, the sea was alloted to Neptune, but he joined with Apollo in a conspiracy against his brother Jupiter, who made him to serve Laomedon in building the walls of Troy, but failing to obtain any reward for his service, he sent a sea-monster on the coasts, which ravaged the country. He afterwards fell in love with Amphitrite,—whom he had for a long while before disdained—and by the assistance of a dolphin, he flattered her into marrying him. His gratitude to the dolphin for such kindness was expressed by placing him among the stars, and he became a constellation.

Neptune was called Poseidon by the Greeks, and Consus by the Romans, who erected an altar to him in the circus, which was the origin of the Circeusian games or horse-races, instituted in his honor.

Neptune is governor of the sea, and father of all the rivers and fountains. He rides in a shell car drawn by sea-horses preceded by his children—which are called Tritons, and sea-nymphs.

Owing to the manner in which he was preserved from death while a child, he has ever since manifested the fondest affection for the children of the sea, and rarely or never lets an occasion pass when they first cross the *line* of his dominions that he does not pay them marked attention.

Oct. 28, 185–.—The hope of yesterday is the history of to-day. This is the S. E. Trade-wind, the steady fresh breeze we have been longing for, and on which we may depend for a week or two, probably all the way to Rio. It seems to light up every countenance with the smiles of cheerfulness. We are flying onward seven or eight knots an hour in the direction which we most desire to go,—and the excitement amongst the crew concerning Neptune's expected visit on the morrow is becoming intense.

Oct. 29—Truly delightful is the weather of to-day. The N. E. Trade-winds are fresh and bracing. By meridian observation, we are some forty miles north of the equator, and shall cross the line this afternoon.

At eight o'clock last night our ship was hailed, apparently at some distance ahead.

"Ship ahoy! what ship is that?"

The officer of the deck, with his trumpet, answered:—"The United States ship——"

"Who commands that ship?"

"Captain Wallace Williams."

"Where are you bound?"

"On a cruise."

Whereupon the voice rejoined, "I am Neptune, his oceanic majesty, on a moonlight excursion in my car of state. Welcome, sir, welcome to my dominions! As you have many of my children on board, I shall be happy to visit you at the hour of crossing the line to-morrow."

"Shall be pleased to see you, sir: good night."

"Good night!" exclaimed old Nep', as though he were a mile in the distance.

According to the time-honored custom, the veteran tars of the ship obtained permission from the captain, to prepare an entertainment on board for old father Neptune, when the ship crossed the equator. The programme of the fête was submitted by them to the first lieutenant and approved by him. From which it appeared, however, that they were inclined to disregard the accustomed sanctity of the quarter-deck, so far as to name some of the commissioned officers; through the names of these the first lieutenant ran his pencil, telling them that they must confine their license and liberties to those who occupy that part of the ship forward of the mainmast. For a week or two they had been busily employed, when at leisure from the duties of the ship, in the preparation of horses and other imposing fixtures for the occasion. And, as before said, the affair was opened last night by one of the boatswain's mates, who personated Neptune, and who on this occasion went out to the end of the jib-boom, and throwing his voice through an immense trumpet beyond the sail, seemed to be at least a mile in the distance. This hail very naturally induced all the verdant ones, his children, to rush to the forecastle; and when congregated there thick as they could stand, they were at a moment most unexpected, literally drenched with a flood of water poured down from the foretop by Neptune's confederates.

The visit of his oceanic majesty, with his wife, Amphitrite, is to take place this afternoon. He is to be attended by his clerk, surgeon and barber, with a numerous corps of assistants, and expected to appear in his imperial car drawn by six horses, with driver and footmen, and for the preservation of order, ten constables, one of whom is denominated high constable, and a numerous engine company; and last of all, is to follow his favorite bear, Ursa Major, of the starry heavens. Preparations indicating something *extraordinary* have produced a great sensation in the minds of all those who have never crossed the line, and who are in fearful expectation of having something done with them which may not be entirely agreeable.

Six bells!—3 o'clock P. M. The curtain, which has until now been suspended from the break on the port side of the forecastle gracefully rises, and the imperial cortége issues forth to the tune of "life on the ocean wave," played by the drummer and fifer of the marines, who lead the van. There was Neptune and his Queen Amphitrite with their son seated on the car of state, drawn by six horses; and their train, as signified in the programme, was truly imposing.

The captain and officers had assembled on the poop-deck to witness the entertainment, and right well did we enjoy it. All of Neptune's suite were in *uniform*,—that is, they were dressed in sackcloth and old canvas, their garments stained with various colored paints, fringed with oakum. Immense

wigs, with auburn locks of hemp dangling over their shoulders and down their backs; most of them with cocked hats made of cast off trousers, and their faces and bare legs highly colored with ochre. Neptune was attired as became the person of his Majesty, with a crown. His queen had on a neatly fitting skirt after the fashion of the time, though not of the finest texture, and her whitened shoulders and bust appointments, over which hung in ample profusion auburn ringlets of hemp, stayed here and there with bright tin combs, was by no means an imperfect imitation of many of the fairer sex, and the maternal care with which she watched all the movements of her little son, who bashfully clung to her dress, gave her the air of a dutiful matron.

Neptune's car was a large wash-tub, placed on the wheels of a gun-carriage, over which was bent a calache, composed of the hoops of old casks, covered with a sheet of red bunting. Therein stood Neptune, bearing aloft his trident with his left hand, which resembled the wooden pitchfork of the farmer, and holding an immense speaking trumpet in his right. Behind him sat his queen, gazing about through a monstrous quizing-glass, with her son nestling at her side. Driving to the centre of the quarter-deck, Neptune gave the order to "Halt!" through his thundering trumpet, and then severally rebuked his attendants in livery, for not coming forward to aid their queen in alighting from the car. Stepping forward towards the officers, Neptune raised his trident, gracefully touched his crown, and turning his glaring eyes upon the captain, exclaimed—

"How fare you, Captain Williams?"

"Quite well, I thank you," replied the captain.

"I have come on board, sir, to welcome you to my dominions."

"Glad to see you, sir," said the captain.

"And I understand, sir, that you have a number of my children on board here, on whom I have never yet conferred the *freedom* of the seas. I have therefore brought all my imperial household along, to confer on the youngsters all the honors. This, sir, is Amphitrite, my wife, the empress of the ocean; and this, sir, is her son, who was born in a fresh nor'-wester. Here, sir, is my surgeon, with his dispensary suspended in front. Step along, doctor, and let the captain take a look at your phials, your pills, and things. Here is my barber from Paris, something of a dandy to be sure, but a good barber. He can shave any man, sir, to an allspice. His razors (rusty iron hoops, two feet long) are rather small for his use, but they are unusually bright, and in excellent order. And this, sir, is bruin, (a man on all fours, covered like a bear), a pet of my queen's—a sort of a lady's lap-dog, sir. All these other gentlemen, in the livery of the seas, are good men and true, sir; and we have come, sir, as I said before, to initiate my children, whom I have never before seen, into the equatorial mysteries, and with your permission we will now proceed to do it."

"You may proceed," said the captain, "and I trust that your children may prove worthy of their sire."

Bowing most gracefully, Neptune re-entered the car, with his wife and son, and resumed his march round the capstan to the starboard side, where, in the gangway forward of the main hatch, there had been erected a high barber's chair, directly back of which, and between the guns, was suspended a large tarpaulin full of water. Around this the *savans* assembled, Neptune taking his seat a short distance aft, with his speaking trumpet in hand. His children, those who had never before crossed the line, had been ordered below to the berth-deck at the commencement of the ceremonies. They were now brought up, one at a time, by the constables, and *put through* in the most approved style. Some of them came up willingly, others with much reluctance. The subject was seated on the chair or bench, some six feet from the deck, where the barber, standing on a platform before him, thrust a large white-wash brush into a bucket of soap-suds, and lathered his head and face with great liberality; then drawing from a canvass bag his case of *extensive* razors, went through all the movements of a *sure-enough barber.* Meanwhile old Neptune was thundering forth injunctions to the subject of this *barbarous* treatment, such as "Never eat *brown* bread when you can get *white*—never man the lee-rigging when you can reach the weather—never fall in love with the maid when you can fall in love with her mistress," &c. &c. And, at a most unexpected moment, the subject found himself upset backward into the overflowing tarpaulin, kept full by Neptune's firemen at the pumps. Here he had to struggle with Bruin, who remained there to duck and scrub him, until the poor subject leaped out half-drowned, under an immense shower produced by the firemen, who directed the pipe attached to the hose of the engine. Conducted up from the berth-deck, one at a time, the candidate, as in other mysterious initiations, knew not how he was to fare. Neptune having finished his duties to his children, again formed his procession, and marched back around the capstan, stopping in front of the officers, still assembled on the port-side of the poop, he arose in his car, and thanking the captain for his courtesy, said he had given passports to all his children. "And, sir," said he, "since we have done our duty in this respect, we trust, sir, you will not let us go *dri—dri*—DRIVE on, coachman! God, how I stammer!"

They went forward, gave three cheers, and, at the third, threw overboard all their toggery. After they had washed and dressed, the captain ordered a *splice of the main brace.*

NAVY NEWS.

There is none hardly in the *personnel*, except the tallies in the game which is being played against the gigantic five-battery of the Efficiency Board. In the *materiel* there is much; but the distance from appropriation to application is so great, that the amount visible can only be made manifest by long intervals of time.

A glance at the Navy-Yard at Brooklyn, with a few months retrospective, is only just beginning to indicate the contemplations of the government. That large portion which has forever been a noisy and obnoxious frog-pond, is being filled up rapidly, under the ample appropriation by Congress, and is already covered with some half-dozen immense brick edifices, to be used for mechanical purposes.

Never has there been such a ring of the blacksmith's hammer, the mason's trowel, and the carpenter's axe, as that which has incessantly saluted the ears of denizens in, and visitors to, that locality during the past year.

And the dry dock has been unusually busy, too, receiving for repairs the vessels of the East India and home squadrons, and those of the Arctic Expedition which has recently terminated so successfully.

But there is still room for useful buildings in the yard. The dwellings for officers, so long in contemplation, and so necessary to the government—for all officers should be required to live at and within the post to which they are attached—have not yet been built or even estimated for.

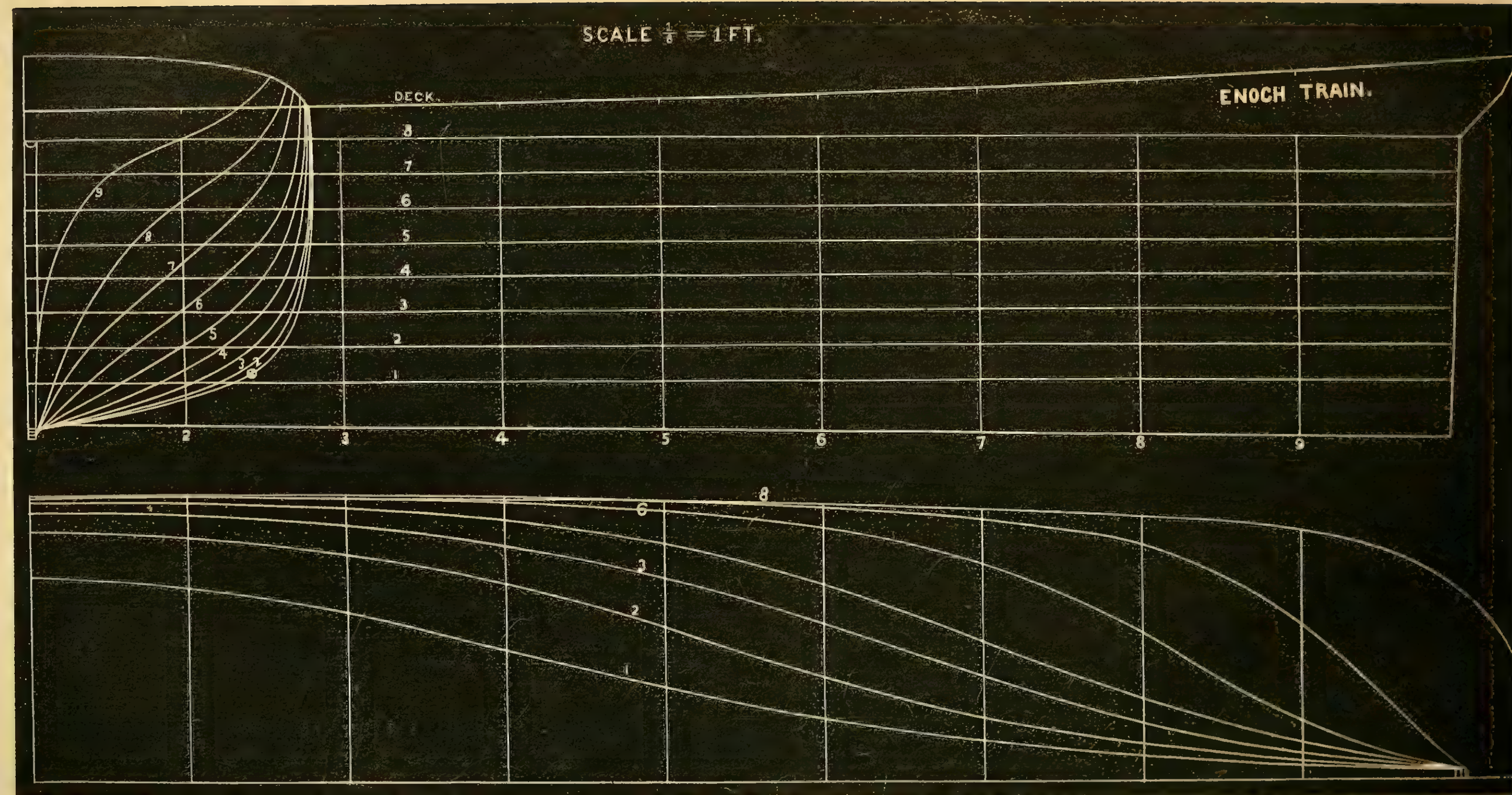
If the officers of government at Washington were to visit the old dilapidated barns beyond the yard, which are called the marine barracks, a sense of expediency and propriety, if not of shame, would impel them to urge the building of appropriate edifices for that essential force. Edifices should be within, and not as now, beyond the limits of the yard.

The new and splendid "Magazine," which is to be the pride of the country and the gem of the navy, will probably be launched early in January.

The Brandywine, Mississippi, and Sabine are lying there in ordinary, with no evidences of preparation for sea. The Falmouth, which has been at anchor in Gravesend Bay, for a month or two, under the suspicion of having been infected with yellow fever, has been brought up to the yard. The Levant sailed a few days since for the East Indies; and the Saratoga for the West Indies. The Potomac and the Cyane have just left for the cruising grounds of the home squadron, beyond the Gulf of Mexico. The store-ship Relief, returned from Rio Janeiro on the 17th instant.

Captain Hartstein, late of the Arctic Expedition, has been ordered to his favorite bark, the Release, and all the apprentices who may be entered in the service, are to be schooled in their profession, on board his vessel, before going to sea.

Lieutenant W. S. Lovell, one of the officers of the Arctic Expedition, has been ordered to command the steamer Engineer, at Norfolk.



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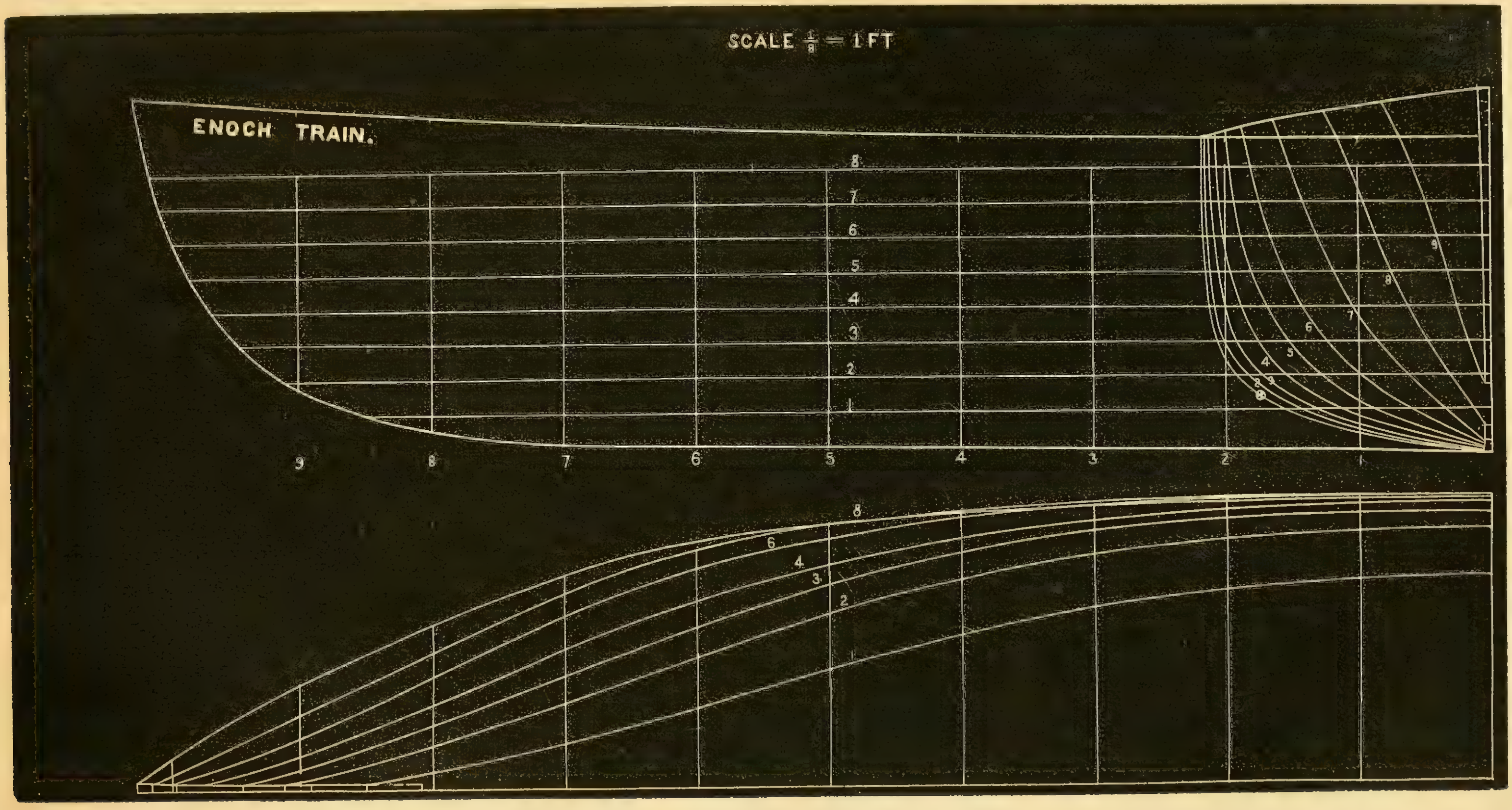
ENOCH TRAIN.
DECK.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ENOCH TRAIN.

PROPELLER ENOCH TRAIN, OF BOSTON.

We are particularly interested in the peculiarities of model of every vessel driven by this mode of propulsion, whether applied at the stern in one screw, or at the sides of the vessel, in two, or whether partially or wholly submerged. The Enoch Train was designed by Mr. Samuel H. Pook, who is favorably known in Boston in the line of his profession, and although she is regarded as being well adapted to the service for which she was designed, *viz.*: that of a tug and relief-boat, she would have been still better suited to her assigned service, had Mr. Pook been allowed to furnish a model in accordance with his own views. In this vessel we have another exemplification of the extreme folly of yielding to the capricious notions of captains and owners in modelling vessels. It matters little how strongly the architect may protest against a compliance with the crude notions of his employer, he will be held responsible for the performance of the vessel in the widening circle of public opinion, while his protest is forgotten as a dream, even in the counting-house or model-room where entered.

The reason why we are disposed to particularize this description of vessel may be found in the fact, that little is known of the actual requirements of adaptation to the screw, as we shall show in connection with the lines of other propellers which will be forthcoming. The Enoch Train will establish one fact, which is this, that although the city of Brotherly Love can boast of having had more experience in screw propellers than the metropolis of the Bay State, yet, in the results, she has no advantage. The performance of this vessel, like all others driven by the screw, have proved that the posterior end of the vessel may either be filled out to advantage, or that the anterior end may be lengthened, as was recommended by Mr. Pook in the model of this vessel. Her dimensions are as follows: Length on load-line, 125.50; breadth moulded, 24.66; depth, 12.

ADJUSTING THE NUMBER AND DEPTH OF PADDLE-WHEEL BLADES.

It appears that something more may be said upon paddle-wheels; we will therefore remark, that so long as the common rectangular floats continue to be used, the *number* and *depth* of them should regulate each other upon the principle laid down upon page 27 of the present volume, to wit: "that the right-angled resistance from the surface of one paddle at its central (or upper) edge, should pass below, and entirely clear of the paddle before it." It is upon this principle that we can account for the results of experiments where, sometimes, one-third of a steamer's blades have been removed from their upper edges without diminishing the speed, but rather improving it. In such cases the arms have been too numerous for the *width* of the

blades. All the upper parts, which extended above a point, from which a line drawn at right angles to the arm would pass to, or below the lower edge of the blade before it, was disturbing the fluid to no good purpose, but rather loading the wheel with dead water, which, instead of pressing against the ocean, impinged upon the pre-dipping paddles. If an *equable distribution of resistance* shall continue to be approximately sought in the periphery of common paddle-wheels, by using a large number of blades, instead of seeking for it in the *true form* of propelling blades, let the depth or breadth of the floats be reduced, as above, and subsequent changes will be found unnecessary. How many wheels have become *water* instead of "paddle" wheels, by *guessing* at the proper number and depth of their blades!

HISTORICAL SKETCHES OF SHIP-BUILDING.

BY A SHIP-BUILDER.

The marine of England seems to have been maintained on a comparatively powerful footing up to the period of the Norman Conquest, and at that day was far superior to that of any other maritime nation.

There can be no doubt that if Harold, the Saxon monarch of England, had studied as Alfred did with the Danes at a former period, to prevent rather than to resist invasion, and depend upon his *naval* resources, the conquest of England would never have been achieved. The insignificant fleet which landed William the Conqueror and his hardy Normans upon the shores of Britain bore no comparison to the naval strength of his Saxon adversary, whose fleet by some fatality, after being long stationed off the Isle of Wight, was dispersed in the belief that William had abandoned his *fillibustering* enterprise.

The flotilla of the Norman adventurer is variously stated, by some at 900, by others at 3,000 vessels. But as the invading army numbered only about 60,000 troops, we may form a pretty just conception of the insignificant size of these vessels, whether we take the former or the latter number for our data. In one case they were capable of containing about 66 men, and in the other only 20 to each vessel, showing the condition of the art in Normandy at that time.

But the conquest of Britain being accomplished, the shores on either side of the British Channel came under the same rule, and there can be no doubt that the constant intercourse across the narrow seas which now divided the empire under Norman sway, for a period of more than three centuries, did much to foster and develop a maritime spirit among the population of

England, and accustomed it to regard fame and fortune as the legitimate rewards of nautical adventure.

During many years subsequent to the conquest, we have but few facts which enable us to draw some vague conclusions relative to the probable size and nature of the shipping used. The vessel in which Prince William, son to Henry I., was lost between France and England, had on board 300 souls, nearly half of whom were ladies and persons of rank (so called,) and would require somewhat spacious accommodations. In a shipwreck that occurred during the reign of Henry II., about the same number of persons were on board and perished, which tends to prove that such was about the extent of the accommodation afforded by the vessels of that period. The row galley still continued to be used for war, while it became necessary to apply sails to vessels of commerce, and they began gradually to recover their importance. No doubt this change in propulsory power had considerable influence in the improvement of navigation and ship-building, for the trade in wine, wool and woollen clothes between France and England sprang into a large measure of importance. The general introduction of sails on board vessels of commerce also had its influence upon the constitution of the fleets of later days assembled for the services of war. The expedition of Richard Cœur de Lion, in 1190, to join the crusade to the Holy Land, consisted of 9 ships of extraordinary size 150 of smaller dimensions, and only 38 galleys propelled by oars.

But we find from the records of this expedition that the magnitude of vessels belonging to the Northern seas of Europe were surpassed by those of the Mediterranean, for he captured a Saracenic vessel of such size as to contain 1,500 Saracens and a large quantity of stores. By the addition of the vessels captured at Cyprus, with those which he had hired at Marseilles and in Sicily, Richard's armament now consisted of 254 " tall shippes," and about threescore galliots.

It was during the reign of the Norman monarchs, in the twelfth century, that England first put forth her claim to the "sovereignty of the seas," meaning at that time the seas between her own domain and the continent of Europe. In the reign of John, in the beginning of the thirteenth century, this arrogant claim was extended, and the masters of foreign ships were required to strike their colors to the English flag, or forfeit their vessels as lawful prizes. This monarch most carefully ostered the naval policy of Britain. The right to the absolute sovereignty (which, by the way, was an early manifestation of "individual sovereignty," as monarchs understood the term) of the seas, was maintained up to the reign of James I. Queen Elizabeth insisted on and maintained her power to refuse or grant passage through the narrow seas, according to her pleasure. In 1654 the Dutch were compelled, after a severe struggle, to submit to it, and consent to "strike their flags and lower their topsails on meeting any ship of the English navy in

the British seas"—a homage which continued to be exacted from all foreign vessels down to the close of Nelson's victories over the naval powers of France and Spain at Trafalgar, when it was thought to be judicious, by the Admiralty of Great Britain, to voluntarily abandon such an arbitrary and offensive assumption of power, lest the day might come when it could no longer be maintained, except at the cannon's mouth.

About the year 1300, the invention of the mariner's compass, by Flavio Gioia, a Neapolitan, rendered the performances of *long* voyages comparatively easy with large sailing ships, and thus gave a new impetus to marine architecture in Southern Europe. If we will reflect, it was not the only time when the length of voyages tended to improve ship-building, as the East India, California, and Australian trades in our own day will witness.

In 1340 a great naval battle took place between the French and English, the force of the former amounting to 400 vessels, including 120 "large" Genoese mercenaries, and that of the latter consisting of but 260 sail. The French lost from 20,000 to 30,000 men and 200 vessels; and the English lost only 4,000 men. No mention is made of galleys as forming any portion of the fleets, and the size of some of them may be estimated by the fact that 400 persons were found slain on a single French ship.

In 1344, Edward, king of England, first enrolled the British fleet, which then consisted of 710 ships and 14,151 mariners, besides 38 foreign ships, with 815 mariners. By this time the Mediterranean galley had become entirely superseded in the English shipping. In 1347, cannon were first used at the celebrated siege of Calais, in which this fleet was engaged.

The rig of sailing-vessels up to this period was very simple, as there is good reason to infer that the addition of the bowsprit to the spars of a vessel was not made at an earlier date, and the usual complement of seamen, or mariners, as contradistinguished from the soldiers who did the fighting, consisted of seventeen or twenty persons to each vessel.

The first navigation act to encourage English ship-building, was passed in 1381, and discountenanced the employment of foreign vessels. In those days it was customary for the king to possess ships, (Edward III. had 25), but they were used both for war and commerce, and the merchants frequently hired vessels of their sovereigns. The following are the minute details concerning the construction of a ship for King Henry V., built at Bayonne, dated 1419:

"At the makyng of this letter yt was in this estate, that ys, to wetyng xxxvi. strakys in hyth y bordyd, on the weche strakys hyth y layde xj. bemys; the mast beme ys yn leynthe xlvj. comyn fete, and the beme of the hameron afore ys in leynthe xxxix. fete, and the beme of the hameron by hynde is in leynthe xxxiij. fete; fro the onemost ende of the stemne in to the post by hynde ys in leynthe a hondryd iijxx. and vj. fete; and the stemne ys in hithe, iiijxx. and xvj. fete, and the post xlviij. fete; and the kele

is yn lengthe a hondryd and xij. fete; but he is y rotyt, and must be chaungyd."

Henry V. was very energetical in increasing the number of the royal navy; and on one occasion we find the Spaniards offering him two "carracks" for sale, one of which is described as of a tonnage equal to 1,400, and the other to 1,000 butts. This is the first instance on record of estimating the magnitude of vessels by a standard of tonnage. On the death of Henry his ships were sold, and the naval affairs fell into a depressed condition. In 1443, a naval force of eight ships, armed with one hundred and fifty men each, and attended by a barge of eighty men, and a balinger of forty, was stationed to guard the coast of England, and were spoken of in later times as "the shipes whyche was apoyntede to kepe the Narrow Sees."

We will close this paper with a brief account of the celebrated William Canynge, a merchant of Bristol, who was a superior man for the middle of the fifteenth century. His mercantile transactions were on so extensive a scale, and carried on in vessels of such large size, that they must have had an important influence in improving ship-building at that period. He was a great patron of the arts, and a friend and protector of genius. Having "forfeited the king's peace," Edward IV. took 2,470 tons of shipping from him, instead of a fine of 3,000 marks. The names and tonnage of some of his vessels are as follow: The Mary and John, 900 tons; Mary Redcliffe, of 500 tons; and Mary Canynge, of 400 tons; two other "large ships" of Bristol are rated at 511 and 300 tons. Henry VI., in 1449, styles Canynge "his beloved eminent merchant of Bristol." At that time Bristol was second only to London in commercial importance.

It is probable that the tonnage above referred to was estimated according to the number of butts of wine that a vessel could carry; it was sometimes called "tonnage" and sometimes "portage."

W. W. B.

THE WAR.

A LARGE amount of nautical and naval matter, of more importance to the mass of our readers at this time, has necessarily crowded out what we have prepared on the winter quarters which the belligerents now seem to be going into.

DISASTERS AT SEA.

STEAMERS.

Arabian, (Canadian) struck a pier at Port Darlington, Lake Ontario, Oct. 17, and sunk.
Alleghany, (propeller) Buffalo for Milwaukie, ran ashore entering Milwaukie harbor, Sept. 30.
Rossiter, (propeller) Chicago for St. Joseph, totally lost near Calamet Light, Oct. 14.
Falcon, (propeller) Chicago for Buffalo, went aground on St. Claire Flats, prior to Oct. 20.
Sandusky, (propeller) Toledo for Buffalo, broke her rudder Oct. 21, at Black River Harbor, and grounded.
Charter Oak, (propeller) lost opposite Girard Erie Canal, Pa., Oct. 28, all hands supposed to be lost.
Plymouth, (propeller) Chicago for Buffalo, it is reported went ashore at Racine Point.
Illinois, (propeller) Buffalo for Chicago, struck a sunken reef Oct. 27, and sunk.
Union, New-York for Havre, broke back-shaft on Oct. 29, in lat. 41, long. 65, and put back to repair.
Manhattan, New-York for Albany, was in collision with steamer Commodore, Nov. 1, in a fog, and badly damaged.
Commodore, New-York for Troy, was in collision with steamer Manhattan, Nov. 1st, and had her stem carried away.
Francis Skiddy, running between New-York and Albany, ran aground near Kinderhook, Nov. 1, in a fog.
Mary Stewart, (propeller) ran into sch. Ariel, Nov. 10, and lost her stem.
Michigan, (propeller) Chicago for Ogdensburg, blew out her cylinder-head in St. Clair River, prior to Nov. 10.
Fintry, (propeller) burst her boiler, Nov. 8, while off Port Stanley, eight lives lost.
Delaware, was wrecked off Sheboygan, Nov. 5, eleven lives lost.
Niagara, (propeller) Chicago for Buffalo, in collision, had her stem and bow stove, Oct. 30.
Omar Pasha, from Chicago, water-logged and sunk at Sheboygan, prior to Nov. 7.

SHIPS.

City of Manchester, Liverpool for Montreal, sprung a leak, Aug. 30, and put into Cork.
Unknown, was seen on Hatteras Bar, Sept 29, fast going to pieces, all hands lost.
Ashland, New-Orleans for Liverpool, put back to New-Orleans, Oct. 7, leaky.
Eliza Kimball, Calcutta for Mauritius, experienced heavy weather and became leaky, June 29.
Charles Cooper, (Amer.) at Calcutta, lost cut-water, windlass, &c., by collision, previous to Aug. 17.
Mary Hall, at Liverpool, (Eng.) was struck by lightning, Oct. 4, which shattered her topgallant-mast.
Constellation, at Liverpool, (Eng.) was struck by lightning, Oct. 4, her foretopmast and cap slightly injured.
Unknown, was seen July 7, lat. 36 32 N., lon. 47 50 W., water-logged, main and mizenmasts cut away, rudder gone, &c.
Iris, while lying at Port Gregory, New-Holland, was driven ashore, July 10, is a total loss.
Concordia, (supposed Br.) went ashore at Isle Madame, prior to Oct. 19.
Fairfield, Liverpool for New-York, Oct. 23, off Tuskar, was in contact with ship Jane Shepherds, and badly damaged.
Gossamer, New-Castle, E., for New-York, put into President Roads, Oct 24, with loss of rudder.
Andrew Foster, New-York for Liverpool, lost close-reefed topsails and main-spencer, in a gale, Oct. 21.
Geo. F. Patten, (Amer.) from New-Orleans, on entering Marseilles, prior to Oct. 6, ran against a pier and sunk.
Sparkling Wave, Shanghai for London, went ashore, in proceeding down the river, July 17.
Margaret, Callao for Valencia, Spain, put into St. Thomas, June 12, leaking, with head-rails and check-knees broken.
G. L. Sampson, burnt at sea.
Try, (Br.) Bristol for New-York, put back to Bristol, with loss of anchor, chain and windlass Oct. 10.
Edward Stanley, Cardiff for San Francisco, lost maintopsail and otherwise damaged, prior to Nov. 3.
Herald (Br.) Bathurst, N. B., for Liverpool, struck on Cape Bear Reef, in returning to Bathurst, as she was leaking, prior to Oct. 23.
Unknown, was seen Oct. 10, in lat. 35 51 N., lon. 30 54 W., half burnt to the water's edge.
America, from Trapani, went ashore at Cabrita Point, previous to Oct. 18, it is feared she will be a total wreck
Roscius, Liverpool for New-York, in lon. 31, lost topgallantmast, foretopmast, &c., prior to Oct. 5.
Logan, was totally lost off the Fejees, four of the crew were lost, Jan. 20.
Unknown, was seen in lat. 38 N., lon. 35 W., bottom up, prior to Oct. 12.

Horizon, Liverpool for New-Orleans, lost foretopsail, foresail and mizen-yards in a gale, prior to Oct. 19.
Glance, Greenock for New-York, sprung mainmast and mainyard, prior to Oct. 14.
F. W. Brune, Havre for New-Orleans, was in collision with steamship Transit, (Br.) prior to Oct. 18, and badly damaged.
Allen Kerr, (Br.) London for New-Orleans, put into Plymouth, Oct. 26, leaky.
Lizzie Jarvis, lost on the Ladrone Islands, prior to Oct. 24.
King Fisher, (new) of New-Bedford, was wrecked, prior to Aug. 4, on Company Island, near Roussole Straits.
Enterprise, of New-Bedford, was wrecked, prior to Aug. 4, on Company Island, near Roussole Straits.
Jefferson, of New-London, was wrecked, prior to Aug. 4, on Cape Elizabeth, Saghollow Island.
Unknown, was seen off Jones' Island, bottom up.
Samuel Badger, Trapani for Boston, sprung aleak and foundered at sea, near Fayal, prior to Nov. 14.
Unknown, was seen ashore on Berry Island, Nov. 25.
Australia, (of Salem) put into Mauritius, July 4, leaky.
James McHenry, was seen, Aug. 10, lat. 35 54 S., lon. 23 53 E., leaking badly and rudder-post gone.

BARQUES.

Unknown, ashore on Skillagelee, Lake Michigan, Oct. 23.
John Potter, Wilmington, N. C., for Lisbon, put into New-York, Nov. 6, leaking badly.
Pario, New-York for Key West, was lost, Oct. 21, near Green Turtle Kay.
Peruvian, Liverpool for Quebec, went ashore on Egg Island, St. Lawrence river, about Oct. 12.
Annata, from Quebec, ran ashore at Cape Calorouse, C. B., Oct. 9, is a total loss.
Junior, Trapani for Quebec, ran ashore, near Louisburg, prior to Oct. 31.
Badger State, in entering the harbor of Chicago, got foul of the steamer Cescent City and badly damaged her, the barque afterwards stove the propeller Delaware's stem.
America, New-Orleans for Boston, put into Charleston, Oct. 30, in distress, lost mainmast, &c.
Bounding Billow, from Boston *via* Malta, went ashore on Smyrna, prior to Sept. 8.
E. B Morgan, Chicago for Buffalo, struck on a reef, a short distance above Buffalo, Oct. 31.
Sonora, bound for Chicago, put into St. Clair River, Oct. 28, with loss of some sails and rigging.
Mary Stockton, arrived at Milwaukie, prior to Oct. 30, in a leaking condition.
Utica, Cleveland for Oswego, lost her masts and became unmanageable, Oct. 26.
Brunette, at Belfast, Oct. 23, parted her fastenings and ran foul of the sch. D. K. Avery, injuring herself badly.
Pointer, New-York for Mobile, lost mainmast, previous to Oct. 15.
Charles C. Fowler, Buctouche for Hull, badly damaged in collision with a vessel, and ran for a harbor.
Wagram, at Boston, in contact with brig Colin Campbell, Oct. 18, had cut-water started, lost jib-boom, &c.
Laconic, (Br.) in contact, at Boston, with (Br.) barque Mentor, Oct. 23, lost foretopgallant-masts, jibboom, &c.
Lion, New-York for Baltimore, went ashore on Hog Island, Oct. 20.
Anglesea, (Br.) Liverpool for Castine, put into Queenstown, Oct. 2, leaky.
Scott Dyer, Buenos Ayres for England, put into Montevideo, in distress, prior to Aug. 13.
Sarah Ann, Liverpool for Charleston, experienced bad weather, damaged sails, &c., prior to Oct. 28.
Delhi, (Br.) Shields for Wexford, put into Cork in distress, prior to Oct. 12.
Waitstill, New-York for Rio Grande, was wrecked on the coast of Brazil, in July.
Rising Sun, (Norwegian) was lost in sailing from Rio Grande, prior to Sept. 5.
Linden, Malaga for New-York, lost fore-topgallantmast, split sails, &c., in her passage, prior to Nov. 3.
Warden, Warren for Savannah, went ashore on Block Island, Oct. 31.
John Henry, New-York for Cork, Oct. 20, returned to port, in consequence of vessel leaking badly.
Abeono, abandoned by her crew a little east of Grand Bank, she was full of water.
Mentor, (Br.) at Boston, was in contact with barque Laconic, Oct. 23, and lost foretopmast, main-topgallantmast, &c.
Good Intent, Quebec for Fowey, was off Riviere du Loup, prior to Oct. 2, with her rudder gone.
Abbott Reading, at Valparaiso from Liverpool, caught fire by the explosion of some gunpowder, Sept. 17.
Henry Porcher, while lying at New Liverpool, Cove of Quebec, filled at her bow-port and sunk, Oct. 12, captain lost.
Platina, from Fowey, was in contact with barque Charles C. Fowler, Sept. 18, and foundered.
Wm. Henry, of Warren, while entering Galveston, broke her rudder.
Louisa Erskine, Sydney, N. S. W., for Valparaiso, July 20, encountered severe gales and returned to Sydney.

Proteus, bound for Mirimachi, was in collision with steamship Africa, prior to Nov. 3, and disabled.
Victorine, Savannah for Boston, went ashore on Nix Mate, Oct. 6.
Seboois, from Boston, went ashore on Lovell's Island, prior to Oct. 11.
Gibraltar, went ashore at Detroit, prior to Nov. 14.
Superior, bound for Liverpool, was dismasted in a gale prior to Nov. 14, but reached Beaver Harbor in safety.
Albion, Quebec for Hartlepoole, was seen, Oct. 25, water-logged and abandoned
John Sweeny, from Buffalo, was capsized, near Detroit, Nov. 11.
Oak Hill, Boston for New-Orleans, was in contact with ship Abbot Lawrence, Nov. 13, and returned to port.
Don, Hull for Quebec, went ashore in the cove below Betsiamis River, prior to Oct. 23.
Lord Sidmouth, Quebec for Port Glasgow, returned to Quebec, Oct. 25, with loss of anchors and chains.

BRIGS.

Julia Dean, ashore on Lake Michigan, Oct. 23.
F. B. Gardiner, Milwaukie for Buffalo, returned to Milwaukie, Oct. 15, with the loss of both topmasts.
Isabella Walker, for St. John's, N. B., was water-logged and abandoned, date unknown.
Greyhound for the Foxes, Lake Michigan, in collision with the propeller Mount Vernon, lost bowsprit, &c.
Alert, for Chicago, sunk previous to Oct. 20, off Pigeon River.
Credo, Quebec for Aberystwith, went ashore at St. John's, N. B., Oct. 26.
Racine, was capsized and lost off Milwaukie, Oct. 20.
Ontario, was capsized off Milwaukie, previous to Oct. 22.
Marie Denis, Cardenas for Quebec, arrived off Beaver Harbor, Nov. 2, six lives and anchor lost.
Roscius, while loading in Oswego Harbor, was ran into by the sch. Belle Sheridan and badly damaged.
Edward, Philadelphia for Gardiner, put into Newport, Oct. 25, with loss of main boom and deck load.
Canton, of Cleveland, while lying at the mouth of the St. Clair River, Nov. 2, was run into by sch. Tom Dyer and badly damaged.
Unknown, supposed to be the Three Bells, of Canada, went into Sheboygan Bay, and sunk on the night o. Oct. 27.
Ramsey Crooks, for Chicago, ran on to a reef of rocks, Oct. 27, in attempting to make the harbor at St. Helen's Island.
Mechanic, bound for Chicago, put into St. Clair River, Oct. 28, with loss of some sails and rigging
Chas. Edward, Belfast for Philadelphia, went ashore previous to Oct. 7, on Cape Henlopen.
Unknown, ran into brig Young America and was badly damaged.
Judge Tenney, drifted ashore at Belfast, Oct. 23.
Xenophon, Alexandria for Boston, got ashore on Handkerchief Shoal, off Monomy, Oct. 18.
Telos, Philadelphia for Boston, was found abandoned and in a sinking condition, near Barnegat, N. J., Oct. 14.
McBride, was run into near Milwaukie, Oct. 3, by some vessel unknown, and sunk.
Alfred Exall, Philadelphia for New-Orleans, put back to Philadelphia, Oct. 19, leaking badly.
Colin Campbell, (Br.) at Boston, in collision with barque Wagram, Oct. 18, was considerably damaged.
Martha Hill, of Belfast, Me., went ashore, prior to Oct. 14, near Nag's Head, N. C., totally lost.
Robert Bruce, (Br.) Liverpool for Wilmington, N. C., grounded on the rocks N.E. of Bermuda, Oct. 8, and was badly damaged.
Excellent, Mattapoisett for Atlantic Ocean, lost both cables and anchors and went ashore at Wood's Hole, Little Harbor, Oct. 30.
Lincoln Webb, arrived at Wilmington, N. C., Oct. 29, with loss of fore-topgallantmast, sails split and leaky.
Emily, Philadelphia for Boston, ran ashore at Hedge Fence, Oct. 25.
Sarah Ellen, Portland for Philadelphia, lost her foretopmast, topgallantmast and maintopmast, in a gale, Oct. 25.
Laurel, (Br.) New-York for Richibucto, went ashore at Sandy Point Canso, Oct. 20.
Mermaid, arrived at Mobile from New-York, Oct. 31, and same day caught fire and burned to the water's edge.
Tribune, (Am.) Nuevitas for New-York, went ashore on Sugar Cays, coast of Cuba, Oct. 4.
J. Means, Wilmington for Boston, at Newport Oct. 27, had been in collision with brig James Wakefield.
R. F. Loper, Port-au-Prince for Philadelphia, was lost on the Hog-sties, Oct. 5.
Mary Ann, Georgetown, S. C., for Boston, ran ashore, Oct. 30, near West Chop.
Unknown, two brigs, (herm.) it is reported went ashore at Monomy Point, prior to Oct. 29.
Nancy McDonald, New-Orleans for Rio Janeiro, put into Pernambuco, Oct. 5, leaky.

E. S. Penny, at New-York, Oct. 28, broke adrift and damaged other vessels, and was herself badly damaged.

Tavernier, at New-York, while lying at pier 5, N. R., was run into by brig E. S. Penny, Oct. 28, and slightly damaged.

James Redden, Quebec for Carlisle, returned to port, Nov. 8, having struck on a shoal, and was badly damaged.

John Irwin, went ashore at Two Rivers, prior to Nov. 12.

Helvellyn, Wilmington, N. C., for Biddleford, was abandoned at sea, Oct. 9, off Charleston, leaking badly.

S. Webster, Philadelphia for Calais, returned to Philadelphia in consequence of having sprung aleak, Nov. 10.

Hebron, Windsor, for Bridgeport, Conn., was in contact with a sch. in Vineyard Sound, Oct. 8, and had bowsprit carried away.

SCHOONERS.

Swallow, Oakville for Toronto, was driven ashore, Oct. 21, near Thompson's Mill.

S. J. Holley, for Chicago, came in collision with barque Chieftain, Point aux Barques, Oct. 17, and sunk.

L. R. Rockwell, mistook the light of a wrecked vessel and went ashore, previous to Sept. 27, on Lake Michigan.

Tuscarora, ashore at Chicago, Sept. 27.

John F. Porter, for Milwaukie, both topmasts carried away, Oct. 20, and capsized off Milwaukie.

Active, Manitowoc for Chicago, was capsized off Port Washington, Oct. 10.

Saranac, Chicago for St. Joseph, went ashore south of south pier, previous to Oct. 16, lost captain.

G. S. Weeks, went ashore Oct. 11, at Pier Marquette, Lake Michigan.

Daniel Williams, was run into by the steamer Magnet, Oct. 16, and sunk, at Kingston, C.W.

St. Clair, sunk previous to Oct. 20, off Point aux Barques.

C. Reeves, from Chicago, went ashore prior to Oct. 20, and returned to Chicago, leaking badly.

Mayflower, Georgetown, S. C., for Boston, arrived at Holmes' Hole, Oct. 26, with sails split, &c.

Unknown, sunk 10 miles east of Great Egg Harbor, prior to Oct. 25.

Unknown, went ashore on Long Point West, Oct. 26, seven of the crew lost.

Sam. Strong, for Buffalo, ashore at Pier Marquette, Lake Michigan.

Duncan Romer, reported ashore a short distance above Goodrich.

Water Witch, ashore on Stoney Island.

Unknown, supposed to be the Thomas Y. Avery, of Oswego, in collision with the brig Young America, Nov. 1, at Port Huron, lost every spar.

Antares, Toledo for Buffalo, went ashore at Cleveland, Oct. 28.

Buckingham, Toledo for Buffalo, ashore at Fairport, Nov. 2, captain lost.

Grant, was picked up between Racine and Milwaukie, disabled, previous to Oct. 28.

Minerva, Coburg for Oswego, sunk in the harbor of Chicago, Oct. 25.

J. W. Brown, Kenosha for Buffalo, lost sails, &c., Oct. 11, leaking badly.

Ralph Campbell, Chicago for Buffalo, grounded on the White Shoals, Lake Michigan, Oct. 30, leaks badly.

S. L. Noble, Port Stanley for Buffalo, sprung aleak Oct. 29, and put into Port Burwell.

Ellen, got ashore at Goodrich harbor, Oct. 21.

C. Harrison, Milwaukie for Buffalo, put into Cleveland, Oct. 24, leaking badly.

Belle Sheridan, in entering the Oswego harbor, ran into the brig Roscius, and was slightly damaged.

Isaac Buchanan, (Canadian) Port Stanly for Buffalo, went ashore at Gravelly Bay, Oct. 28.

L. D. Coman, from Cleveland, arrived at Buffalo, Oct. 28, leaking badly.

NOTICES TO MARINERS.

Bell Boat off Charleston Bar, South Carolina.—An iron bell boat, painted with black and white perpendicular stripes, has been placed outside of Charleston, (South Garolina,) main ship bar, in five and a quarter fathoms water at low tide; Charleston Main light in range, bearing northwest a little northerly; Rattlesnake Shoal light-vessel, northeast by north; Sullivan's Island outer beacon, north by west ¼ west. Length of mooring chain, 32 fathoms.

The bell is surmounted on a mast, and rung by the action of the sea.

Masters of vessels, pilots, and fishermen, are particularly requested to report at the Custom-house, or Light-house Inspector's-office, should they see anything wrong with this boat.

Bell Boat off Fenwick's Island Shoal, West of Cape Henlopen, Del.—An iron bell boat has been anchored off the middle of this shoal in ten fathoms water, Fenwick's island bearing by compass W. ½ S., distant 6½ miles. The boat lies close to the outer edge of the shoal, which is very steep and runs N. E. and S. W. Vessels finding themselves unexpectedly in with the boat, should make easting before shaping a course for the Delaware or any northern port.

The hull is painted black, the mast red. The bell rings by the action of the sea.

Five Fathom Bank Light-ship.—The lighting apparatus of this vessel has been improved by substituting argand lamps and reflectors in the place of the common bowl lamps.

The ship lays in 8½ futhoms water, S. W. ¼ S. from the bank, 2¼ miles distant; Cape Henlopen light-house bearing W. by S. ¼ S.; Cape May light-house, W. by N. ¾ N. Mariners will take notice that the ship has been moved about a mile nearer to the bank than she has hitherto laid.

Christiana Light-house.—The reflector apparatus at this light-house has been replaced by a 4th order lens of 360 degrees.

Absecom Bell Boat.—The Bell clappers of this boat having been damaged by collisions with passing vessels, are replaced and in good working order.

Light at Joinville Island, Harbor of Cherchel, Algiers, Africa.—The following extract from a communication of the U. S. Consul at Algiers has been received at this office through the Department of State, and is published for the information of mariners:

"After October 15th, 1855, a light will be placed at the extremity of the breakwater which extends from the east end of Joinville island at the entrance of the harbor of Cherchel.

"This light, seen from the sea, is bright and clear, and cannot be confounded with those of the city, which are much farther off. Thus, for the future, navigators will be able to avoid the reef which bounds the eastern entrance of the port."

Coast of Spain.—Alteration of Tarifa Light, Strait of Gibraltar.—Official information has been received at this office, that the Spanish government has given notice that on and after the 1st of September (ultimo), the present *revolving* light on the south point of Tarifa island would be changed to a *fixed* light of the natural color.

The position of the light remains unaltered, in 36° N., and longitude 5° 36' 37" west of Greenwich.

The new illuminating apparatus is catadioptric and of the first order, and the light being 132 feet above the sea, is visible at the distance of 20 miles.

Lights at Mauritius.—Official information has been received at this office, that the Colonial government at Mauritius has given notice, that the light towers lately in course of construction in that island being now completed, the following lights will be exhibited on and after the 1st day of December next (1855):

Revolving Light on Flat Island.—1. The light tower on Flat island (at the north end of Mauritius) stands on the highest part of the island, and at its southwest angle, in latitude 19° 53' 26" S, longitude 57° 41' 12" E. of Greenwich. The illuminating apparatus is catadioptric, or reflecting, and of the first order.

The light is *revolving*, its period of revolution being one minute, showing a bright light for twenty seconds, followed by an interval of darkness for forty seconds. It is placed at an elevation of 365 feet above the level of the sea, and will be visible from the deck of a ship at a distance of 25 miles in clear weather.

Fixed Light on Canonnier Point.—2. The light on Canonnier point, at the northwest angle to the island of Mauritius, stands at the extremity of the point, in lat. 20° 0' 35" S., long. 57° 35' 24" E. of Greenwich, and bears S. W. ½ W., distant 9 miles nearly from the light-house on Flat island.

The light is *fixed;* it is of the natural color to seaward, and of the first order. It is placed at a height of 38 feet above the level of the sea, and will be visible at a distance of 10 miles in clear weather.

The object of this light is to indicate the position of a dangerous reef which extends off shore 1¾ miles from Canonnier point, and to warn vessels from approaching too near the coral reefs which lie to the northeast and southwest of that point.

When seen from the southward on any bearing to the northward of N. E. ½ E. the light will appear *red*, thereby warning the mariner (when within 6 miles of the light) that he is too near the land.

Harbor Lights for Port Louis.—3. A *green* light will be exhibited on a mast at the outer angle of Fort George, on the western point of Tonnelier or Cooper's island, on the left or eastern side of the entrance of Port Louis harbor.

4. A *red* light will be exhibited on a mast in the Mortella tower, which stands at the entrance of Grand river, on its western bank, at 1½ miles S. W. by W. of Fort George.

The object of these two harbor lights is to lead up to and mark the best anchorage off Fort Louis. A vessel closing the *red* light on a S. S. W. bearing should drop her anchor directly the *green* light on Fort George bears S. E. ½ S. All bearings are magnetic. Variation 11° 47' west.

SALES OF VESSELS.

Barque Brothers, 286 tons, 4 years old, for $12,000.

Barque, 400 tons, built by M. Barney, Esq., to Messrs. W. F. H. Whitmore & Co. and C. H. Balch, Esq., Boston, for about $32,500.

Ship Sea, (whaling) 807 tons, built in Baltimore, in 1838, to Messrs. Taylor & Gardner, for the freighting business, for $13,000 (minus her whaling apparatus, &c.)

Barque Kanawha, 260 tons, 8 years old, for a whaler, at $8,000, equal to cash.

Sch. Mary & Elizabeth, built at Machias, in 1844, 139 tons, in New-York, at auction, for $750.

Propeller Chicago, to American Transportation Co., for $50,000, for the Buffalo and Chicago trade.

One-eighth ship James Loper, at Nantucket, to E. W. Perry, for $6,400.

One-twenty-eighth barque Peru, at Nantucket, to Z. L. Adams, at the rate of $8,150.

Ship William, at auction, at Kensington Screw Dock, for $2,850.

Ship Vandalia, 494 tons, at Callao, for $7,000, prior to Sept. 11.

Ship Stalwart, (new) 1,100 tons, for $56,000 cash, supposed to a New-York house.

Barque W. H. D. C. Wright, at Rio Janeiro, and now sails under Brazilian flag.

Ship Alexandria, at Baltimore, 491 tons, for $12,000, built in Virginia, in 1836.

Ship Escort, 6 months old, built at Georgetown, Me., 1,450 tons, for $82,000.

Three-fourths barque Alma, 265 tons, 4 years old, built at Portland, at the rate of $11,000 for the whole.

Ship Wabamo, 10 months old, 671 tons, built at Wiscasset, Me., for $33,000.

Ship Hannah Crooker, 6½ years old, built at Bath, Me., 500 tons, for $18,000.

Barque Nelson Place, of New-York, 4 years old, to parties in Portland, on private terms.

Ship Albany, built in New-York, 1832, 464 tons, sold for $12,000.

Barque Abeona, 300 tons, 7 years old, sold for $8,000, built at Augusta, Me.

Sch. Conquest, built in Virginia, 1853, was sold, terms not known.

Ship Tchernaya, 1,400 tons, (new) built at Quebec, was purchased in New-York, for $45,000.

Ship, not yet named, (new) sold to New-York and Boston parties, for $32,500, built at Swanzey, by M. Bamney.

Brig Elizabeth, by auction, 139 tons, built at Wilmington, Del., price not known.

Steamboat John Marshall, at New-York, by auction, Sept. 6, for $4,000, cash.

Brig Arabella, 291 tons, 1 year old, built at Frankfort, Me., for $13,000, cash.

Ship S. H. Talbot, 593 tons, 9 months, built at East Machias, for $30,000.

Three-fourths ship Normandie, 1,500 tons, built at Bath, Me., 1854, sold at the rate of $88,000.

A ship, (new) at East Boston, 1,125 tons, at $62 per ton, terms unknown.

Ship New-York, late Liverpool packet, 860 tons, 15 years old, for $30,000.

A new barque, at Warren, R. I., 450 tons, sold to parties in Boston, for $20,000.

Barque J. J. Cobb, 315 tons, 4 years old, built at Baltimore, for $10,000.

Sch. Dolphin, 3 years old, 135 tons, built in Baltimore, sold for $5,050, cash.

A barque, 400 tons, at Barneyville, sold at Boston, for $32,500, cash.

Barque S. H. Waterman, (whaler) 480 tons, late of Stonington, to Boston paries, terms not known.

Ship Vandalia, 494 tons, sold at Callao, prior to Oct. 11, for $7,000.

Sch. Mary Clark, 96 tons, built at Newburyport, 1840, sold at auction for $1,100, cash.

Barque Ala, of Providence, sold to a Philadelphia house, terms not known.

A ship, at Thomaston, on the stocks, 1,200 tons, sold for $56 per ton, fully rigged, when delivered.

Glasgow, about 597 tons, to R. A. Allen & Co., of Savannah.

Ship Telegragh, 1,068 tons, built at Medford, in 1851, for $43,000.

Barque May Queen, built at Salem, 3½ years old, 308 tons, for $16,000, cash.

Ship Reporter, of Boston, 1,410 tons, 3 years old, for $76,000.

Ship Gen. Washington, of Alexandria, 675 tons, 17 years old, for $18,000, cash.

Ship Comoro, 440 tons, 8 years old, built at Damariscotta, for $16,000.

Brig Token, 140 tons, built at Scitwate, Mass., at auction, for $675, cash.

Ship John Dunlap, of Brunswick, Me., 476 tons, 20 years old, terms not stated.

Ship Seth Sprague, built at Damariscotta, 698 tons, 8 years old, sold for $26,000 to a New-York house.

Ship Ashburton, 553 tons, sold at Boston, in Oct., for about $16,000.

Ship Hydra, 499 tons, sold in Boston for $24,000.

Barque Rajah, of Westport, 250 tons, sold Nov. 3, at auction, for $4,650.

Barque Pilot Fish, at Boston, recently, for $17,000 cash.

Barque Mary, of Waldoboro, 311 tons, recently, price not known.

Barque Rouble, of Boston, was sold at Sydney, N. S. W., July 10, for $6,000.

Brig Pacific, of Belfast, 160 tons, $2,200 cash

Brig Icarian, 199 tons, 3 years old, $6,300 cash.

Brig Cornelia, 156 tons, sold at auction in Boston, Nov. 1st, for $7,000 cash.
One-thirty-second of barque Franklin, of New-Bedford, Oct. 27, at the rate of $30,000.
A new barque of 600 tons, built at Freeport, Oct. 16, for $55 per ton, cash, fitted for sea.
Ship Cynthia, of Mobile, 21 years old, 375 tons, sold at Boston, recently, for $12,000 cash.
One-half of Ship Unicorn, 396 tons, 22 years old, for $3,000.
Barque Warren White, 405 tons, built at Eastport, 1851, in fine order, for $18,000.
Ship Tioga, 215 tons, at Boston, Oct. 17, for $1,775 cash.
One-quarter of barque Alice Frazier, by auction, at New-Bedford, Oct. 25, at the rate of $11,900, also the thirty-second of same vessel, at the rate of $10,500.
Barque Old Hickory, 432 tons, three and a half years old, built at Boston, sold for $26,500, at private sale, Oct. 24.
Whistling Wind, (new,) about 1700 tons, built at Baltimore, sold for about $86,000.
Brig Sea Foam, 190 tons, three and a half years old, built at Baltimore, sold on private terms.
Schooner Mary Powell, 240 tons, 7 years old, built at Bellville, N. J., sold on private terms.
Brig South Boston, (Br.,) 197 tons, 2 years old, sold Nov. 7, for $5,100, one-third cash.
Schooner Sarah Jane, 93 tons, 6 years old, sold at Providence, on private terms.
Barque Medora, 197 tons, sold at Boston, Oct. 31, for $5,500
Barque Diligence, 240 tons, sold at Boston, Oct. 31, for $6,300.
Barque N. W. Bridge, 240 tons, sold at Boston, Oct. 31, for $5,800.
Brig Henrietta, 234 tons, built at Medford, sold at Boston, Oct. 31, for $7,000.
Schooner Zerviah, 117 tons, built at Saybrook, Mass., in 1839, sold for $1,500 cash.
Ship, 1066 tons, building at East Dennis, nearly ready for launching, sold on private terms.
Schooner Louisa H. Endicott, of Great Egg Harbor, 157 tons, three years old, sold for $7000.
Brig Lucy H. Chase, of Newburyport, sold for $5,000.
Schooner Hannah Grant, 70 tons, sold for $3,550.
One-quarter of Bark Salem, 4 years old, built at Covington, Ky., sold at the rate of $20,000 for the whole.
Schooner C. T. Smyth, 200 tons, built at Brookhaven, in 1854, sold for $9,000.
A Ship, 846 tons, built at Salem, not yet named, sold on private terms.
Schooner Metes, 3 years old, 137 tons, built at Rockland, sold for $5,500 cash.
Schooner Gulf Stream, (three masted,) two and a half years old, 362 tons, sold for $20,000 cash.
Ship Golden Racer, 837 tons, built at Thomaston, in 1852, sold for $40,000.
Ship Hussar, built at Newburyport, in 1852, 721 tons, sold on private terms.
A ship, 1,000 tons, not yet named, built at Portland, sold to a New-York house.
Brig C. H. Sampson, built at Bath, Me., in 1852, rebuilt 1855, 139 tons, sold by auction, Oct. 23, for $3,500.
Brig Linda, 175 tons, built at East Machias, Me., in 1852, sold by auction, Oct. 23, for $4,675.
Brig Joseph Albion, 6 years old, sold for $5,600.
Ship Chicara, of New-Bedford, 18 years old, 467 tons, sold for $14,000 cash.
Bark Bonnie Doon, (Am.,) sold about July 5, at Sydney, N. S. W., terms not stated.
Brig M. A. Jones, was sold July 16, at Sydney, N. S. W., for £1,000.
Ship Silvia, (new), built at Portland, was sold to a Liverpool house, on private terms.
Steamer United States, sold to a Cuban house, about the middle of Oct., name changed to the Mexico.
Barque Rhodes, built in Maine, 8 years old, 480 tons, (new,) was sold for $14,000 cash.
A ship not yet named, built at Bath, was sold to a Boston house, terms not stated.
Ship Granite, built at Belfast, 1000 tons, was sold to a Boston house for $60,000.
Ship Isis, (new,) built at Wiscasset, was sold for $30,000.
One-sixteenth of barque Dunbarton was sold by auction, at New Bedford, at the rate of $4,000.
The hull of ship Copia was sold for $270.
Three-fourths of barque Oak Hill, built at Scarboro, 510 tons, 10 months old, sold at the rate of $30,000.
Ship Joseph Warren, built in Maine, 727 tons, one and a half year old, sold on private terms.
Brig Angola, 163 tons, 6 years old, sold for $3,500.

LAUNCHES.

At Westbrook, Oct. 24, by John E. Donnell, Esq., ship Young Sam, 1000 tons.
At Warren, R. I., Oct. 23, by Philip Chace, Esq., barque Wanderer, 600 tons, for the freighting business.
At Pembroke, Me., Oct. 25, by Hayden and Pettengall, ship Planter.
At Pembroke, Me., Oct. 27, by James M. Lincoln, Esq., barque Macao, 313 tons, single deck.
At Brewer, Me., Oct 25, by Jeptha Richardson, Esq., barque Damon, 400 tons.
At Calais, recently, by Emery Sawyer, Esq., brig Royalston, 300 tons.
At Thomaston, Oct. 14, by J. & C. C. Morton, ship James R. Keeler, 1200 tons.
At Thomaston, Oct. 10, by Alexander McCullum, Esq., ship Leona, 1200 tons.

At West Dennis, Oct. 23, by Crowell & Studley, schooner West Dennis, 300 tons.
At Freeport, by Capt. Enoch Talbot, recently, a ship, 1000 tons, not yet named.
At Freeport, Oct. 25, by Mr. Bliss, ship M. L. Frank, 600 tons
At Portland, Oct. 10, by N. Blanchard & Sons, a barque of 700 tons, not yet named.
At Damariscotta, Oct. 26, by Hitchcock & Co., a ship of 1400 tons, not named.
At Richmond, Me., Oct. 30, by Geo. H. Farrin, Esq., ship John Sidney, 868 tons.
At Richmond, by Thomas Spear, Esq., ship Nile, 680 tons.
At Thomaston, Oct. 24, by Webb & Gilchrist, ship R. Jacobs, 1200 tons.
At Thomaston, Oct. 27, by Chapman & Flint, ship J. F. Chapman, 1100 tons.
At Warren, Me , Oct. 25, brig Crimea, 300 tons.
At Eastport, Oct. 27, by C. S. Huston, Esq., brig Mary E. Milliken, 308 tons.
At Harrrington, Me., Oct. 26, by J. B. Coffin, Esq., brig Beatrice.
At Thomaston, Oct. 27, by Stetson, Gerry & Co., ship Samuel Watts, 1300 tons.
At Waldoboro, Oct, 27, by A. Storer & Co., ship James Hovey, 1200 tons.
At Cape Elizabeth, about Oct. 24, by J. W. Dyer, Esq., a ship of 1400 tons, not named.
At Addison, Oct. 27, by L. A. Knowles, Esq., brig Lucy Anna, 164 tons.
At Waldoboro, Oct. 27, by Samuel Nash. brig Ocean Wave, 271 tons.
At Bluehill, Me., Oct. 27, Herm. brig, Mira W. Holt, 300 tons.
At Tremont, Me., Oct. 26, by Messrs. Richardson, brig Mountain Eagle, 257 tons.
At Fell's Point, Baltimore, Nov. 3., by J. J. Abrams, ship Cherubim, 1800 tons.
At Kennebunk, Oct. 27th, by D. and S. Ward, ship Patterson, 850 tons.
At Lubec, Oct. 24th, brig C. W. Ring, 300 tons.
At Gouldsboro, about Oct. 30th, by John Kingsley, Esq., brig Mecosta, 300 tons.
At Franklin, Me., Oct. 26th, by John West & Co., barque Ocean Bride, 325 tons, single deck.
At Ellsworth, Oct. 13th, by Nathan B. Hall, herm. brig Mary C. Haskell, 285 tons.
At Rockland, October 11, single-deck barque Architect, 425 tons.
At Richmond, Me., about Oct. 27, a ship not yet named, 500 tons.
At Millbridge, Me., Oct 12th, brig Anita Owen, 320 tons.
At Salem, Oct. 27, by A. H. Gardner, Esq., a ship not yet named, 846 tons.
At Portsmouth, Oct. 27, by the Mechanics' Ship Building Co., ship St. Paul, 1200 tons.
At Charlestown, Oct 27, by Joshua Margoun, ship Pocahontas, 1000 tons.
At Portland, Sept. 26, by Hall & Bartol, a ship of 1000 tons, not yet named.
At East Boston, Oct. 13, by Donald McKay, Esq., ship Abbott Lawrence, 1600 tons.
At Camden, Me., Oct. 25, brig Jesse Rhinas, 300 tons.
At Yarmouth, Me., in Oct., by Allen, Hutchins & Co , ship Reaper, 700 tons.
At Alma, Me., Oct., 25, a brig 300 tons, not yet named.
At Portland, Oct., by N. Blanchard & Son, ship Silvia.
At South Salem, Oct. 10, brig Mary Wilkins, 266 tons.
At Bath, Oct. 10, by Thos. Howard & Parker, a ship not yet named, 741 tons.
At Warren, Me., Oct. 8, by William Spear, Esq., barque Benjamin Burgess, 300 tons.
At Belfast, Oct., by Hagget & McMichel, ship Granite, 1000 tons.
At Pittston, Oct. 8, by Wm. Bradstreet, Esq., a ship of about 1200 tons.
At Westbrook, Oct 26th, a herm. brig not yet named, 250 tons.
At Belfast, Nov. 8, by L. R. Palmer, Esq., brig Lucia W. Angier, 250 tons
At Harpswell, Oct , by Curtis & Estes, barque Andes, 276 tons.

NEW BOOKS.

The Japan Expedition. Japan and Around the World. An account of three visits to the Japanese Empire; with sketches of Madeira, St. Helena, Cape of Good Hope, Mauritius, Ceylon, Singapore, China, and Loo-Choo. By J. W. Spalding, of the U. S. Steam-Frigate Mississippi, Flag-ship of the Expedition; with eight illustrations in tint. Redfield, 34 Beekman-st., New-York, 1855.

A Visit to India, China, and Japan, in the year 1853. By Bayard Taylor, New-York: G. P. Putnam & Co., 10 Park Place. London: Sampson, Low, Son & Co., 1855.

Mr. Spalding's book has too comprehensive a title: the reader is led to expect more than he will find. The author professes to "only embody observations of what came under his notice in a cruise of nearly two and a half years — and endeavors to tell the tale of his travels as his eyes told it to him."

It is perhaps better, because more in accordance with his taste, that he put off writing until he could arrange his "jottings down to friends" on *terra firma ;* and, as the sequel shows, compare some of said jottings with the developments of those who would profit by the object which gave him so fine an opportunity for treasuring up in his memory an abundance of new things fit for book-making.

"He has indulged in no adjectives about the Ocean, because he believes that there has been more deliberate nonsense written upon it than upon any other thing in all Nature." We regret being under the necessity of concluding, that had he been more deliberate in the use of them about such things as he has written, we should have found his observations far more readable.

If the reader has plenty of time, and plenty of charity for bad grammar, he will find here an interesting first view of much that will repay perusal. A vein of dislike to the Commodore pervades the whole of the narrative, and occasionally becomes so prominent as to excite any emotions but those of delight at the novelty of the scenes which would otherwise be entertaining.

Of the treaty with Japan, Mr. Spalding gives a copy, and twice asserts that "we have no *commercial* treaty with Japan, but only one of 'peace and amity,' and strange that the newspapers will persist in saying so."

It really appears to us strange, that any one after reading the treaty, should say anything different from the newspapers regarding it. How long since Mr. Spalding made up his mind that we have no commercial treaty with Japan, we can conjecture. It is at least no strange thing to cruisers that enterprising skippers not unfrequently undertake to realize fortunes, based on the success of enterprises which set at naught the best digested treaties, such as always sustain the protection which Commodore Perry's treaty merits and is sure to command of the United States.

The chief value of Mr. Spalding's book consists in the *treaty*, and in the appendix of sailing directions for the newly navigated waters now within the scope of our commerce.

We commend it to authors, as containing an abundance of material for a good book.

A visit *to* India, China and Japan, is almost as defective in title as *Japan and Around the World*, but in the opposite direction. Mr. Taylor's pleasing style and ease of manner, soon captivates the reader, and before he knows it he is travelling along with him at a rapid rate, but not without a glance at and a comprehension of, everything by the way, which gains his approval of the author, and satisfaction with himself, for all the time that it will take to read it. You are content to sit by him in the jungle, while he waits the issue of the fractured axle of his banghy-cart; or to risk your chances at the sight of a tiger in want of a supper, at midnight.

The whole-souled hospitality of the English in Calcutta, blinds not his eyes "to the contemptuous manner in which the natives, even of those of the best and most intelligent classes, are almost invariably spoken of and treated. Social equality, except in some rare instances, is almost entirely out of the question. The tone adopted towards the lower classes, is one of lordly arrogance; towards the rich and enlightened, one of condescension and patronage. I have heard the term 'niggers' applied to the whole race by those high n office; with the lower orders of the English, it is the designation in general use. And this, too, towards those of Caucasian blood, where there is no instinct of race to excuse their unjust prejudice. Why is it that the virtue of Exeter Hall and Stafford House, can tolerate this fact without a blush, yet condemn, with pharisaic zeal, the social inequality of the negro and the white races in America?"

But our traveller has much ground to go over in a short time, and to keep up with him we are next attached to the Embassy in China—at the seat of war with the rebels, and there obtain a better insight into this remarkable crisis in the history of that Empire than can be obtained in ten times the period here occupied, from all other sources whatever.

Next he is in the Japan Expedition—an officer in the Navy. Attends the "Great Exhibition" of the Loo-Choo Industry; is a member of the surveying parties in the interior of Japan; contemplates the benefits accruing to our commerce and the world from the treaty, and finally deduces more profitable conclusions from four months experience on board a man-o'-war, than hundreds do who spend more than four times as many years there.

The Prison of Waltevreden; and a glance at the East India Archipelago. By WALTER M. GIBSON. Illustrated from original sketches. New-York: J. C. Riker, 129 Fulton st., 1855.

A book unique in its arrangement of novel incident in a new field of observation. The author's resources were so entirely connected with himself as in a measure to excuse the "I" which stands between too many words for a nicely told tale; but such adventurers as Captain Gibson are rare in these days, and his book is worthy of a more attentive perusal than the time we have before going to press will admit of. We will say more of it in our next.

The Prince of the House of David; or, Three Years in the Holy City. By the Rev. Professor J. H. INGRAHAM, Rector of St. John's Church, Mobile. New-York: Pudney & Russell, 79 John st.

The name and reputation of Professor Ingraham, as a novelist, are already known to some portions of the reading world. The Professor has abandoned the fields of his former literary pursuits, and donned the clerical robes, by entering upon the sacred office in the Protestant Episcopal Church. Following the example of the lamented Fanny Forrester and others, he is now devoting his pen to religious literature. The work before us, purports to be "a minute narrative of the wonderful events of the life of Christ." It possesses many of the characteristics of the other productions of this late popular caterer to the lovers of fiction. It has much of the air and much of the attraction of romance, and is assumed to have been written by "Adina, a Jewess, who is supposed to have been a resident of Jerusalem, during the last four years of the life of Christ, and addressed in a series of letters to her Father, an Egyptian Jew, then supposed to be living at Alexandria.

Many of the author's descriptions are graphic and beautiful, and some are affecting They lend freshness and interest to the localities, and events and personages associated in New Testament history with the earthly life and mission of Christ. The materials of these "letters" are drawn chiefly from the gospel narrative. There are, however, interwoven with these, mere fancy sketches of *supposed* incidents and characters, which are evidently introduced as rhetorical embellishments, and which, to say the least, are of questionable utility, even in a descriptive "narrative of the wonderful events of the life of Christ." But, if the book shall bring to the author his desired "reward for the midnight hours stolen from parochial labors," and devoted to its production; if it "may be the means of convincing one son or daughter of Abraham to accept Jesus as Messias, or convince the infidel Gentile that he is the very son of the Lord, and Saviour of the World," we heartily wish it God speed.

ICONOGRAPHIC CATALOGUE OF THE U. S. NAVAL LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

Part 1.

SECTION II.

ARCHÆOLOGY.

Concluded.

7. A FRAGMENT from the tomb of Psammitichus. This fragment possesses more than ordinary interest, from the fact that it commemorates the first king of Egypt who opened that country to strangers. He was the fourth prince of the Saïtic dynasty, and the son of Nechos who had been put to death by the Ethiopians who were then masters of Egypt. The Ethiopians left Egypt a prey to trouble and dissensions, and the early princes of the Saïtic dynasty had never enjoyed sovereign authority over the whole kingdom; therefore, when Psammitichus ascended the throne it was for a government of only a twelfth part of Egypt, which was governed by twelve kings, who, in general council, regulated in common all the affairs of the kingdom. This state of things continued for fifteen years, and then met with a termination, singularly fulfilling an oracle that the whole kingdom would eventually fall to the lot of that one of the twelve monarchs who should one day offer a libation with a brazen cup. It came to pass that while all the kings were sacrificing together in the temple of Vulcan at Memphis, that the high priest had by some accident only brought with him eleven golden cups for libations. Psammitichus was the last in order to pour out a libation, and, having no cup, he used as a substitute his brazen helmet. This incident caused great uneasiness among his colleagues, who at once construed it into the fulfilment of the oracle. The apparent thoughtlessness of the act, however, saved Psammitichus from greater punishment than banishment from his kingdom and forbiddance of future participation in the government. To this he refused submission, and calling to his aid some Greeks who had landed in his province, on the coast, he eventually overcame all his colleagues and constituted himself sole monarch of Egypt. For this good service Psammitichus ever afterwards showed the Greeks special favor, preferring them even to the Egyptians, on which account, it is recorded, that over two hundred thousand of the military caste of Egypt left their country and retired to Ethiopia.

Psammitichus proved himself a great warrior, not only in establishing himself the sole monarch of his country, but in a long war in Syria, and in

arresting the progress of the Scythians when they had overrun Asia Minor, and were advancing upon Palestine and Egypt. He died after a prosperous reign of fifty-four years, and was buried at Saïs, which, in the time of Strabo, was the chief city in lower Egypt.

Whenever an Egyptian king died there was a general mourning throughout the country for a period of seventy days, during which time the temples were closed, and all feasts and festivals were suspended. Large processions of both sexes, tearing their garments, their heads covered with mud and dust, met twice a day to sing hymns commemorating his victories.

Among the Egyptian antiquities in this collection, there is quite a variety of mummies: one full sized human, and several of crocodiles, cats, snakes, and ibises. Fanciful and allegorical pictures exist in great variety on the tomb-stones and mummy cases, many of which are everlasting mementoes of arts that are lost, and inspiring lessons for those yet to be gained.

Conceiving it to be fully as appropriate to the mummy in this collection, we here transcribe a copy of an

ADDRESS TO THE MUMMY AT BELZONI'S EXHIBITION.

And thou hast walked about, (how strange a story !)
In Thebes' street, three thousand years ago,
When the Memnomium was in all its glory ;
And time had not begun to overthrow
Those temples, palaces, and piles stupendous,
Of which the very ruins are tremendous.
Speak ! for thou long enough hast acted dummy ;
Thou hast a tongue, come, let us hear its tone ;
Thou art standing on thy legs above ground, Mummy !
Revisiting the glimpses of the moon,
Not like thin ghosts, or disembodied creatures,
But with thy bones, and flesh, and limbs, and features.
Tell us—for thou canst doubtless recollect,
To whom should we assign the Sphinx's fame;
Was Cheopsor Cerephenes' architect
Of either pyramid that bears his name ?
Is Pompey's pillar really a misnomer ?
Had Thebes a hundred gates, as sung by Homer ?
Perhaps thou wert a mason, and forbidden
By oath to tell the mysteries of thy trade ;
Then say what secret melody was hidden
In Memnon's statue which at sunrise play'd.
Perhaps thou wert a priest ; if so, my struggles
Are vain, for priestcraft never owns its juggles.
Perchance that very hand, now pinioned flat,
Has hob-a-robed with Pharaoh, glass to glass :
Or dropped a half-penny in Homer's hat :
Or doffed thine own to let queen Dido pass :
Or held, by Solomon's own invitation,
A torch at the great temple's dedication.
need not ask thee if that hand when armed
Has any Roman soldier mauled and knuckled ;
For thou wert dead, and buried, and embalmed,
Ere Romulus and Remus had been suckled ;
Antiquity appears to have been begun,
Long after thy primeval race was run.
Thou couldst develop, if that wither'd tongue
Might tell us what those sightless orbs have seen,
How the world looked when it was fresh and young ;
And the great deluge still had left it green ;
Or was it then so old that History's pages
Contained no record of its early ages ?
Still silent, incommunicative elf ?
Art sworn to secrecy ? then keep thy vows ;
But prythee tell us something of thyself,
Reveal the secrets of thy prison house ;
Since in the world of spirits thou hast slumber'd,
What hast thou seen—what strange adventures numbered,
Since first thy form was in this box extended,
We have, above ground, seen some strange mutations ;
The Roman empire has begun and ended,
New worlds have risen, we have lost old nations,
And countless kings have in the dust been humbled,
While not a fragment of thy flesh has crumbled.
Didst thou not hear the pother o'er thy head
When the great Persian conquerer Cambyses
Marched armies o'er thy tomb, with thundering tread,
O'erthrew Osiris, Oris, Apis, Isis,
And shook the pyramids with fear and wonder,
When the gigantic Memnon fell asunder ?
If the tomb's secrets may not be confessed,
The nature of thy private life unfold ;
A heart has throbbed beneath that leathern breast,

And tears adown that dusty cheek have rolled:
Have children climbed those knees and kissed that face?
What was thy name and station, age and race?
Statue of flesh, Immortal of the dead!
Imperishable type of evanescence,
Posthumous man, who quit'st thy narrow bed,
And standest undecayed within our presence,
Thou wilt hear nothing till the judgment morning,
When the great trump shall thrill the solemn warning.
Why should this worthless tegument endure,
If its undying guest be lost forever?
Oh let us keep the soul embalmed and pure
In living virtue, that when both must sever,
Although corruption may our frame consume,
Th' immortal spirit in the skies may bloom."

Three hundred years have now elapsed since Europeans first traversed the territory of our Western States. From authentic historic documents we learn that as early as 1655, the French had large establishments, in the territory bordering on Lake Erie, and from Charlevoix's History of New France it appears that missionaries were sent to Onondaga in 1654, and that they formed a settlement there only two years afterwards. When La Salle descended the Mississippi in 1679, he discovered an extensive plain between the lakes of Huron and Illinois, in which was situate a prosperous settlement belonging to the Jesuits. And from this time forward it is well known that the French travelled through most of the territory which borders on Lake Erie and the Ohio river. According to the custom of the times, in the name of their sovereign they took formal possession of the countries they visited, and they usually left memorials of their having done so, at the mouths of rivers, and in conspicuous landmarks, ancient works, and the like. In such places, after singing the Te Deum, they attached the arms of France to whatever appeared to be the most permanent abiding place, and deposited medals and coins.

Swords, gun-barrels, knives, hatchets, and implements of war have frequently been found on the banks of our Western rivers, which are undoubtedly those left by the French when they occupied Pittsburgh, Ligonier, St. Vincent, and other places.

Roman coins, centuries old, have been found in various parts of the same territory, which were doubtless left there either by accident, carelessness, or *design*, when the party knew that certain places were to be explored by Europeans. It may be safely asserted that there never has been found a medal, coin, relic, or monument in North America, having letters on it belonging to any alphabet, either now or ever in use among men of any age or country, that was not traceable to Europeans or their descendants.

American antiquities proper, those which owe their origin to the race which erected the gigantic fortifications and tumuli, which in their structure indicate an origin antecedent to, and more civilized than the North American Indians, but less so than Europeans, are of all others most interesting to us and most worthy of the attention of antiquarians, philosophers or divines, in elucidating the history of man by his works, in this, as compared with those of other parts of the globe.

The towns, villages, templets, cemeteries, altars, camps, forts, towers, monuments—all exist in their relics, which we, in common with every quarter of the earth, inherit. Europe, Asia, Africa and the Islands of the sea, all have their ruins, their pyramids; in Judea and in the steppes of Tartary, in the Rocky Mountains and on the eastern slope of the Aleghanies.

In North America these remains are thickly scattered over the vast plain from the south side of lake Erie to the Mexican gulf—increasing in number, size and grandeur, as we proceed towards the south. They may be followed on into Texas, Mexico and South America, abounding most near the rivers, and rarely or never found except in good soil. In the western prairies, and barren lands, none have ever been discovered.

A few miles from lake Erie, on a hill near Coneaught river, is a mound, where human skeletons of small stature have been dug up totally different from the Indians; but in these same works curiosities have been found, evidently of Indian origin, and others, which the Indians had derived from intercourse with Europeans. Indian antiquities are always met with either on or very near the surface of the soil, or in a grave; while articles belonging to that people who built these immense remains, are usually found many feet below the surface and in river bottoms. There are in the Lyceum a variety of specimens of antiquities, which can be easily distinguished as belonging to the first inhabitants of America or the Indian, which differ much more from each other than do the antiquities of the Indians from their modern implements.

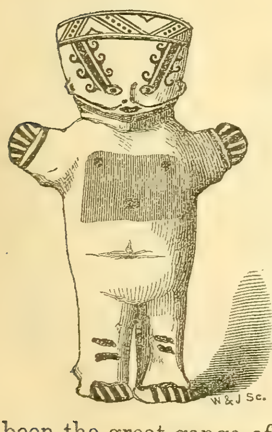

Figure 8—Represents an idol brought from the ruins of the temple of the Sun, near lake Titicaca in Peru. Of idols, there are quite a number in our collection of American antiquities, many of which have features so strikingly Malay, as to be scarcely distinguishable from them. Some of these are made of clay, of peculiar fineness, mixed with sulphate of lime, others are stone. The temples, altars and sacred places, as marked by their ruins in America, are singularly analogous in their situation on the banks and streams of water courses, with those of the Hindoos. Hence, we may infer that ablution was a sacred rite—and the Mississippi may have been the great ganga of a once multitudinous race, even more numerous than those who deemed so sacred the Ganges, the Indus and the Burrampooter. It has been conjectured that there were once over five thousand villages of this people in the valley of the Mississippi alone. Many of the mounds contain an immense number of skeletons.

Figure 9—An urn, taken from a tumulus many feet below the surface of the earth, near San Barbara, California. This was obtained from such ruins as seem to warrant the conclusion that it was made and used by the most ancient race of Americans. It is quite heavy, smoothly made, and would hold about three gallons. Whether this was dug out of solid stone, or made of some kind of composition, not very unlike that of which apothecaries' mortars are made, I am unable to determine. From its appearance, it has been well saturated with oil, by use, and it was most likely used for sacrificial purposes, and has probably contained human bones, burning over a hot fire. It is not a little remarkable, that one similar to it has been found in Scotland. (*Penant in his Tour*, London, 1790.)

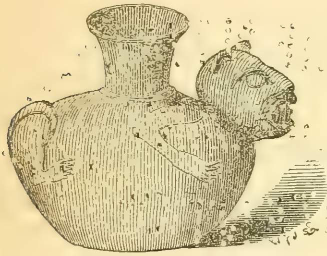

Figure 10—A vessel taken from mounds in Truxillo, Peru, and was probably used by the Incas. It appears to consist of a fine clay, with other material which has rendered it very hard. There have been many vessels of this kind found in various parts of America, representing idols in combination with articles of domestic use. Many of them, the smaller ones especially, have evidently contained oil, the larger ones were probably used for water jugs.

They frequently combine representations of human features of decided Tarter-caste, and are executed with much skill.

There can be no question of the idolatry of this people, in common with all others, except the Jews in the same age of the world, and some antiquarians have even ventured to decide that they worshipped the sun, on the ground that all remains of pathways to their ancient temples are on the east side, and that the mounds are generally so situated as to face the same direction. Medals representing rays of light have also been dug up; they are made of fine clay and composition, which, like the vessel here illustrated, appear to have hardened with time.

In concluding our sketch of antiquities, as illustrated by the collection in the Lyceum, it may be well to observe, that our selection for the accompanying cuts has had no reference to articles of greatest interest, but necessarily to the facilities which we have at command in our progress. Other selections, under different heads, will be on the same footing.

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SHALL VESSELS BE MEASURED INTERNALLY OR EXTERNALLY IN THE UNITED STATES?

In the endeavor to throw a portion of light upon the subject of ship admeasurement—to be founded upon a scientific and rational basis—we have, in the preceding number, detailed the provisions of the British Tonnage Law of May, 1855. That the law, as it now stands in Great Britain, is adapted to the larger portion of her commerce, based, as it is, upon *internal* measurement, we entertain no doubt. The views of her mercantile men have been largely consulted, as they ought to be, in its construction. But while we assent fully to the apparent wants and wishes of British commerce, our grasp of the subject is far from being released at the point where her law-givers have laid it down. It is but too evident, from the discussions of British ship-owners and builders, that a considerable number of eminent disputants would have preferred a law for tonnage based on the *external* cubature of shipping; and while they have given way in their choice to the views of the majority, it is not to be denied that their ideal of ship-mensuration has failed to be quite reached in the present new law. To our mind it is plain, that if sound and cogent arguments can be presented in favor of both systems of measurement, then both systems are right, and should be adopted in conjunction.

It has been contended by the advocates of internal measurement, that it is best adapted for the *major* number of vessels and cargoes, which is plainly admitting that it is not equally well adapted for the minor number. In order to arrive at an opinion upon this vexed question, which shall be broad enough to correspond with the diameter of this country, and with a length proportioned to the destiny of American commerce, it is only necessary to inquire, what are the characteristics of freighted commodities? Are they not known by BULK and WEIGHT? These are the qualities by which com-

mercial appreciation is regulated in transportation from one part of the world to another. Nor does it require a statesman to investigate what a ship's mate can see, viz: that some goods are light and best appreciated by *bulk*, and consequently demand *stowage;* while others are known by *weight*, and for this reason require *displacement*, in marine transportation. Out of this natural relation of merchantable "goods" to *gravity* and *space*, arises the distinction which is made by shipping merchants, between "goods" by the *ton*, and those by the "barrel bulk," or by the *cubic foot*—the latter being by far the best for a unit of measurement for *bulk*. The law of *utility* has established a convenient mode of appraising the transit service of vessels; let it, therefore, be consulted in the admeasurement of them. If the Government shall continue to be permitted to admeasure and register shipping, let the plainest practical views be entertained as a basis of its operations. We would say, let all vessels be surveyed and registered, both by internal cubature and external tonnage of displacement. For the former, the British law of May, 1855, is well adapted, and for the latter, the mode proposed by us* is the best we have yet seen.

The first rule would best apply to vessels freighting light goods, and the latter to those carrying heavy cargoes, just according to the kind of business in which a vessel might be engaged at any particular time. In one case we would inquire, how many barrels, bales, or *cubic feet*, a given ship will *stow?* And, in the other, the question would be, how many *tons* of goods can she *carry?* Thus, with both measurements inserted in the register, the "capacity" would always be known, and no doubt could exist concerning the relative efficiency of any vessel. What is wanted from "tonnage" is the *carrying capacity* of vessels, in every application of the term. Ships of war and yachts would be best compared in efficiency by tonnage of the displacement, and so would all vessels that carry deck-loads, or that are laden before the hold is filled.

Not only do the requirements of navigation indicate the utility of both internal and external admeasurement, but the diverse methods of ship-building, were there no other facts to be considered, are of themselves sufficient to warrant the use of both systems of admeasurement. When we consider, that all vessels are not constructed with the same proportionate scantling, or thickness in the shell, and, that all are not built of material of the same weight or specific gravity, it will appear that unjust results must follow, if the capacity for *burthen*, and for *stowage* also, be not both set forth in the register. It is plain, that two vessels may be built from the same model and moulds, and, owing to material and manner of building, they may differ widely, either in "burthen" or "stowage;" and we want a law of admeasurement, or rules, which shall reach the peculiarities of each, and express these qualities as they exist.

* See Griffiths' Treatise on Ship-building, and Ship-builders' Manual; also, volumes 1 and 2, "Nautical Magazine."

Again, the admeasurement of vessels, it must not be forgotten, is a matter of very great importance, considered in its bearing upon their form and sea-qualities. With regard to strength, speed and safety—the most essential qualities in sea-going vessels—every encouragement should be guaranteed by full and scientific determination of *capacity*. A correct mensuration of the displacement of vessels, as proposed by us, would constitute an invaluable standard of comparison in examining their performances; and would also prove highly useful to the ship-master and broker on many occasions. By adopting both systems of measurement any encouragement to sacrifice the inherent qualities of shipping, which might be concealed in one method, if one only were to be adopted, would be effectually countervailed by applying both as proposed.

In illustration of this subject, it will be instructive to observe the proportions which the shells of vessels bear to their respective internal capacities, as laid down in *Moorsom's Review of Tonnage*, London, 1853.

First Example.—East Indiaman, with three decks of the old usual form, 1,470 tons by new law of 1855, the proportion of shell to the internal cubature, calculated to the height of upper deck, is equal to 18 per cent.

Example 2.—*East Indiaman*, 1,419 tons, with three decks unusually sharp, the proportion is 21.4 per cent.

Example 3.—*East Indiaman*, 1,057 tons, with two decks, rather sharp and shallow, 21.9 per cent.

Example 4.—*Free Trader*, modern form, 744 tons, 22.4 per cent.

Example 5.—*Free Trader*, full and deep, 666 tons, 21.7 per cent.

Example 6.—*Free Trader*, usual form, 478 tons, 24.6 per cent.

Example 7.—*Coasting Brig*, usual form, rather shallow, 184 tons, 26.7 per cent.

Example 8.—*Collier Brig*, deep and full, 149 tons, 25.8 per cent.

Example 9.—*Coasting Brig*, usual form, rather shallow, 98 tons, 28.4 per cent.

Example 10.—*Fruit Schooner*, very sharp and shallow, 109 tons, 30.1 per cent.—of internal capacity to equal the cubic contents of the shell of hull.

It will be seen that the proportionate amount of shell in the different classes of vessels, and also in the various sizes of vessels, differs exceedingly; some vessels having *one-third* more thickness in their shells in proportion to their "stowage" capacity than others. The above are oak-built vessels. The disparity in vessels built of fir woods and iron, will be more plainly seen from the following table:

Tonnage by Moorsom's mode.	Proportion of the oak shell to the internal capacity.	Medium thickness of the sides of oak vessels.	Medium thickness of the sides of fir* vessels.	Medium thickness of the sides of iron vessels.
Tons.	*Per Cent.*	*Inches.*	*Inches.*	*Inches.*
1,400	18	22.26	—	7
1,000	20 5	20.88	28.42	6.96
700	22.5	18.5	—	—†
600	23.25	17.28	22.2	—
500	24	16.44	21.12	5.48
400	25	15.5	19.68	—
300	26	14.7	—	—
200	27	12.9	17.68	4
100	28	11.16	—	—

"In comparing results of examples quoted above, showing the ratio of shell to internal capacity, in the case of the two large Indiamen, it is seen that their tonnage differs only about fifty tons, while one of them is of the usual full form, and the other is unusually sharp. The true capacities being so nearly the same, it is manifest that the sharp vessel must be greater in her principal dimensions to make up for her fineness in form, and we accordingly find, that she has about twelve feet more length. It will, therefore, be observed, that in the full formed vessel the shell is 18 per cent. of the capacity, while in the sharp vessel it is raised to 21 per cent., showing that in long, sharp vessels, the quantity of timber in the shell is greater than in fuller and shorter vessels of the same tonnage by about 3 per cent. of the tonnage.

"Again, comparing the coasting brig and fruiting schooner, of 98 and 109 tons respectively, the former of the usual form, and the latter of the sharpest model, (the sharpness being balanced by an addition of ten feet to the length,) we see a difference of more than one and a half per cent. in the ratio of shell to capacity, proving that a greater quantity of timber is expended in the shells of long, sharp vessels, than short full ones of the same tonnage. Looking at the table, there appears, in regard to vessels of the usual form, to be a certain gradation, in the proportion of shell to capacity, through the various classes; the difference of that ratio being about ten per cent., and the showing, also, that small vessels have more material used in their construction, per ton, than large ones—the larger the vessel the less timber is used in proportion to tonnage, by about three-quarters per cent. for every 100 tons increase."

When the true tonnage is given, as in the table, it is very easy to estimate approximately the converted timber to be used in the shell of any vessel. Thus: the tonnage of a vessel, agreeably to Moorsom's rule, is 1,470 tons, what is the approximate quantity of timber contained in her shell?

Tons. Cubic feet. Per cent.
1470 × 100=147,000 (of internal capacity) × 18=26,460 cubic feet required.

* We understand the term "fir" to include all soft woods, pine, larch, &c.

† And, generally speaking, may be considered to be about one-third of the thickness of the sides of oak vessels of equal tonnage.

A *correct* system of admeasurement will afford the basis of many similar advantages for practical estimates never yet possessed by marine architects or merchants.

Mr. Moorsom next proceeds to show the "advantage given, by external measurement, to thin-sided vessels," supposed to be built "of the same *external* form and dimensions." In comparing oak and fir vessels, of 1,000 tons, the oak would have the advantage in capacity for stowage of cargo, to the amount of 7.54 per cent. We have to add, that in capacity for *displacement*, in carrying dead-weight cargoes, the fir vessel would have the advantage of the oak vessel by from *ten* to *fifteen* per cent.; because, although having thicker sides, the material is of materially less specific gravity—a fir ship weighs less than an oak one. He also shows that iron vessels, of 1,000 tons, would have 14 per cent. advantage over oak vessels in stowage capacity, under external measurement. And, finally, that an iron vessel of 1,000 tons would have 21.46 per cent. advantage over fir vessels in "stowage" capacity, by external measurement. But for carrying dead-weight cargoes, we are of opinion that the iron vessel would have little or no advantage over the fir, because there would be little if any difference in their weights. In the case of vessels of less than 1,000 tons, the advantage that would be given to oak over fir, and iron over oak and fir, greatly increases. We quote his table:

Class of vessel.	Advantage of oak over fir vessels.	Advantage of iron over oak vessels.	Advantage of iron over fir vessels.
Tons.	*Per cent.*	*Per cent.*	*Per cent.*
1000	7.54	14	21.46
500	6.8	16	22.8
200	10	18.6	28.6

But to complete the investigation, Mr. Moorsom enters into a comparison of "the weight of the hulls of iron and wood (oak) built vessels, with a view to showing the effects of their difference of buoyancy in the increased weight of cargo which iron vessels are enabled to carry."

Owing to the almost insurmountable difficulty of procuring the requisite *data* for directly comparing the buoyancy of iron and wood vessels, (as such data should consist of the exact weights of sister ships of different sizes, built of each kind of material,) he found it necessary to have recourse to inductive calculations. The vessels taken for the following table, are British vessels of war, which, he remarks, "may be considered of similar form," and their internal and external capacities, in proportion to their three dimensions, jointly; consequently, their differences in weights of hulls are in the same proportion. "But the old tonnage is in proportion to the length, breadth, and depth jointly, (considering the depth to be in proportion to the half-breadth,) consequently the weights of the hulls are in proportion to the old tonnage."

With regard to vessels built of iron, (in England,) the thickness of the

shell is the same whether they be propelled by the power of steam or sails; but this is not the case in respect of vessels built of wood. By the regulations of the "Society of Lloyd's Register of British and Foreign Shipping," steam-vessels under 300 tons may have the scantlings of a sailing-vessel of one-third less tonnage, and those above 300 tons the scantlings of a sailing-vessel of one-fourth less tonnage. Wherefore, it results, that in the case of *sailing*-vessels, the iron hull is more buoyant than wood by about 23 per cent. of the weight of the wood hull. In the case of *steam*-vessels, the iron vessel is more buoyant than the wood by about 16 per cent. of the weight of the wood hull.

WEIGHTS OF THE HULLS OF BRITISH WAR STEAMERS.

IRON-BUILT VESSELS.

Ships' Names.	Weight of hulls.	Old register tonnage.
	Tons.	*Reg. Tons.*
Simoon	1350	1980
Vulcan	1000	1764
Greenock	955	1413
Birkenhead	917	1405
Megara	753	1397
Trident	385	850
Triton	394	654
Antelope	390	650
Oberon	383	649
Grappler	294	557
Sharpshooter	204	503
Jackall	180	340
	12)7205	12)12162
	600.42 Mean Weight.	1013.5 Mean Register Tonnage.

WOOD-BUILT VESSELS.

Ships' Names.	Weight of hulls.	Old register tonnage.
	Tons.	*Reg. Tons.*
Arrogant	1190	1872
Terrible	1420	1847
Retribution	1275	1641
Dauntless	1010	1497
Amphion	977	1474
Avenger	1160	1444
Odin	1070	1310
Magicienne	973	1255
Conflict	740	1058
Buzzard	749	997
Archer	602	970
Phœnix	660	809
Acheron	337	722
Volcano	407	722
Reynard	330	516
Rifleman	256	486
	16)13156	16)18618
	822.25 Mean Weight.	1163.62 Mean Register Tonnage.

By inductions from the above table and from other data, Mr. Moorsom makes it appear, that, "If two *sailing*-vessels be built from the same drawing, one of wood and the other of iron, the iron vessel will, if both vessels be loaded to the same draught of water, carry a greater weight of cargo than the wood vessel by about 13 per cent." And, "if two *steam-vessels* be built from the same drawing, one of wood and the other of iron, the iron vessel will, if both vessels be loaded to the same draught of water, carry a greater weight of cargo than the wood vessel by about 9 per cent."

"The advantage of iron-built vessels with regard to the power of carrying heavy cargoes, as well as to capacity for the stowage of light merchandise, is therefore indisputable."

We would admonish the reader, that the war vessels of Great Britain

cannot supply data for reliable conclusions which shall guide us to correct opinions upon the comparative merits of iron and wood vessels, engaged in this country in commerce ; and we have only adverted to the investigations of our neighbors for the purpose of showing the manner of arriving at their preference for *internal* measurement. The table shows, however, that a few wooden vessels (of oak) have been built of less weight in proportion to tonnage than certain iron ones; and, we believe there are many American sailing ships afloat that weigh less than British iron vessels of the same displacement, to which Mr. Moorsom's results would not apply. Not only wood, but iron ships may be built of too much material. The more we examine the subject, the more reasons we find for urging the adoption of both systems of admeasurement—*internal* and *external*—as the only satisfactory way to deal with the "CAPACITY" of shipping.

Before concluding this article, we will present a few suggestions upon the tonnage of "steam-boats" and "propellers," as known in the waters of the United States. These vessels date their origin since the enactment of our tonnage law, and, consequently, they are not known in the United States statutes. In England no such specimens of marine architecture are to be found, and, therefore, the new tonnage law of 1855 embraces no provisions which appear entirely suitable for their admeasurement. It is true, *steam* vessels are provided for, but such as are contemplated in the act are more generally known as "steam-ships"—or "sea-steamers," and small river, and ferry-boats. If one of our longest lake or river steamboats, which we now rate at 1,800 or 2,000 tons, were measured by the present British rule, the tonnage would be increased to more than double the amount. The hold would first be measured, and the space of engine-room deducted; then the "covered-in-spaces" on deck, which would include all the space *upon* the main deck, and also the saloon-cabin upon the second, or saloon-deck ; the whole tonnage added would re-astonish us at the magnitude of our high pressure steed-*enormous* floating palaces! Our lake and river steamers and propellers are now measured to the height of main deck only, no deduction being made for engine-room—nor should there be. We confess our utter inability to appreciate the reasons given for deducting the tonnage due to the engine-room of steam vessels when the purpose of measurement is for the assessment of *dues.* When the object is to ascertain the stowage capacity for goods, we do not object; but in the former case, sailing vessels have an equal right to claim exemption from assessment of an amount of "tonnage" equal to the disability for burthen consequent upon their propelling apparatus of masts, spars, sails, &c.; and in the latter case, why not with equal justice leave out of measurement the space usually occupied with *ballast?*

But, whatever objection may fairly lie against deducting the engine-space of steam vessels from their legitimate tonnage, it is materally increased, when we consider that *steam* vessels under Lloyd's Regulations are permitted, "if

under 300 tons, to have the *scantlings* of a sailing vessel of *one-third* less tonnage, and if above 300 tons, to have the *scantlings* of a sailing vessel of *one-fourth* less tonnage!"—a manifest discrimination against sailing vessels and in favor of steam vessels, which greatly aggravates the disadvantages of sail craft, especially in domestic trade, in view of the greater *speed* of vessels propelled by steam. The tendency of the present tonnage law of Great Britain, (May, 1855,) will be to *throw the coasting trade of that country exclusively into the hands of steam vessels, which will ultimately be almost entirely constructed of iron.* What with the tonnage law and Lloyd's rules, England appears to be in a speedy way of extinguishing her best and main nursery for *seamen*, for it is notorious that steam vessels do not make sailors. The preference naturally given to steam vessels by passengers, added to their superior fleetness in voyages, would seem in all reason a sufficient protection against the competition of sail crafts, without especial encouragement to secure the use of steam vessels, and a wise progress in the vehicles of navigation. The chief reason brought forward in England for exempting the engine-room from tonnage is, that the engines and boilers, being a permanent abstraction from the internal capacity, it ought not to be reckoned as such. But if steam vessels lose capacity in *spaces* by taking on board their peculiar propelling apparatus, is it not equally true, that sail vessels lose burthen in *displacement* in shipping theirs? The argument is one-sided. The exemption of the engine-room from tonnage (first enacted in 1819) in its present prescribed extent, in England, amounts, in the case of paddle vessels, to about *two-fifths*, and in screw vessels to about *one-third* of the gross tonnage, according to Mr. Moorsom's investigations; consequently, the *steam* tonnage of Great Britain is registered at about *two-thirds* of the actual tonnage as compared with sail vessels. The gross tonnage of steam vessels is now rather above ten per cent. of the total tonnage of the kingdom.

But, to return to the admeasurement of steam-boats and propellers in our own waters. In our opinion the new English law would prove not well adapted to express the mercantile efficiency of these vessels, for the reason that it would confound the enormous space of cabins, and saloons for passengers above the main deck, with that portion of the hold and deck-room which is usually set apart for *freight*. And, if "the smallness of the weight of cargo carried generally by steam vessels, in comparison with the large portion of the vessel appropriated to the accommodation of passengers, argues strongly against cargo displacement being a fit basis for their assessment," as urged by Mr. Moorsom, what will be said with regard to "the justice and propriety of measuring all poops, round-houses, forecastles, and every *covered-in-space* on deck, that may be used either directly or indirectly by the crew, or made a *source of earnings* for cargo or passengers," as laid down by Mr. Allan Gilmour, of Glasgow, to define *internal measurement*, in its application above deck? Is it not evident, that the tonnage of the upper deck cabins,

and saloons of our lake and river steamers, which would, in many instances, reach the figures of 5,000 and 6,000 tons! under the application of the English rule, be vastly out of proportion to the efficiency of an equal number of tons of sailing vessels, whether for *burthen* or for *stowage?* Most certainly. In view of these qualities, it would constitute a fictitious tonnage. Tonnage by displacement, or the external cubature of the *hull*, would be a better criterion of the magnitude of the vessel. The peculiar build of American steamboats and propellers is consequent upon their uses, which require the utmost possible amount of deck-room and cabins. The freight usually consists of light merchandise, more perishable descriptions of goods, and goods requiring a quick transit; the passengers eminently require space, for their accommodation as well as their carriage, and there can be no law defining the amount of space to be appropriated to the use of each passenger which can be converted into "tonnage" for the purpose of registry, because usually all are carried that can get on board, and the "accommodation" is in proportion to their number. Besides, it might be claimed with some show of argument, that "covered-in-spaces" appropriated to "accommodation" merely, should be exempted from admeasurement.

Screw vessels would be less exposed to the improprieties of *internal* measurement, but would differ only in degree in the perversion of such application to ascertain their legitimate mercantile tonnage.

After all, the best we can do to fix upon just standards of fiscal admeasurement, it must be acknowledged that the subject is one of considerable difficulty; and, as in the case of natural objects, or bodies, a full and correct idea of the magnitude of vessels is only to be obtained by informing our minds both of their *weight* and *size*, or rather, of the weight and size of the *cargoes* which they will carry. An uniform comparison of shipping, expressed in tonnage, is truly a complex problem, and to expect to surmount all its difficulties without availing ourselves of at least two national means of arriving at a full and correct result in regard to it, is futile. A single rule of tonnage, of equitable and universal application to vessels, is among the impossible things to prove its existence in a world of changes, mechanically as well as politically, notwithstanding the commercial reformers of Britain flatter themselves that their last new tonnage law will "*settle* the question, and last as long as the world remains."

In conclusion, we will take occasion to remark, that although great stress is laid upon the assumption that "merchandise, such as fills the hull of a vessel, without wholly loading her to the load draught of water, forms the predominant cargoes of commerce, and constitutes, for the most part, the profits of the ship," is quite too broad for facts in the commerce of the United States, as we believe. The inference in favor of the eligibility of *internal* measurement, and, consequently, of the inadmissibility of external measurement, or cargo displacement, as a basis for tonnage, will, therefore, lose much

of its weight and importance when applied to this country, as urged in reference to the shipping of Great Britain. The eligibility of internal measurement in that country mainly rests upon the fact, that the internal capacity correctly represents the stowage of the above description of merchandize,—together with the fact, that the poops, spar-decks, and covered-in-spaces, which are appropriated entirely to passenger traffic, also frequently form a large item in the profits of the ship." Taking the ground of capacity for "profits" as the true test for the eligibility of a rule for tonnage, we should be glad to be informed, *how* INTERNAL measurement would undertake to compute the space occupied by the *deck-load*, which, as a matter of course, is not "covered-in," and is entirely inappreciable, although the "profits" upon the voyage may depend entirely upon this part of the cargo? and, is it not well known that in the United States, and we may include the British Provinces, that many hundreds of thousands of tons of shipping are engaged in the timber and lumber trade of which these remarks are true. The English law has made no provision whatever, (taking them on their own grounds,) for assessing that evident portion of a vessel's tonnage which carries her deck-load! The consequence will be seen in the construction of vessels, suited to the *law*, as well as the trade, that will carry three-fifths of their cargo, (supposing it to be lumber or timber) upon deck, as do the lumber coasters of Maine, and other districts. It will foster the building of shallow vessels, calculated to carry enormous deck-loads of imperishable freight; and in most mixed cargoes, sufficient quantity of such freight will always be found to be "stowed upon deck," while the more perishable articles only will be placed under hatches. Indeed, we should not be surprised if some "india rubber," or "gutta percha" inventor devised the facilities for adding "poops, forecastles, spar-decks, and covered-in-spaces," to order, to accommodate either passengers or freight, even of a perishable kind, on "owner's account." It may be truly asserted that the greater number of American vessels entering and clearing the ports of the United States, carry deck-loads; and therefore, the "internal capacity," meaning the measurement of the hold, which promised so much of perfection to our neighbors, becomes inadequate as a *desideratum* for tonnage,—especially in a country where a portion of the "predominant cargoes of commerce" are carried *upon deck*.

The truth is, that the displacement must be resorted to, as well as the space under hatches, for determining the tonnage under varying circumstances. The commerce of the United States is more diversified than that of Great Britain, the construction of shipping, for domestic and foreign trade, is more varied, and the cargoes are dissimilar to considerable extent. For the foregoing, and other reasons, to which we have not space to advert, our opinion is unqualified, that both systems of admeasurement, reduced to scientific accuracy, are required, for application in the United States. By adopting the present English system we might secure the advantage of an international

tonnage law, and with the additional advantage of a system based on displacement, as proposed, we might continue to lead the world, not only in the race of speed and competition, but in the construction and correct mercantile appreciation of the capacity of commercial vessels.

THE LATERAL RESISTANCE OF VESSELS.

In the earlier ages of navigation, when sailing vessels performed their voyages with "free sheets" only, the problem of Lateral Resistance received no consideration at the hands of ship-builders. It was only necessary to keep the ship bow-foremost on the line of her course, and the best that could be would have been done by the navigator in those days. Seamanship was then restricted to very narrow bounds. It may be set down as substantially true, that up to the beginning of the sixteenth century neither the model nor the rig of vessels were adapted to the manœuvre of sailing on a bowline, or "by the wind." Prior to this period, however, lateen, and other fore-and-aft setting-sails had found a limited use on boats and small crafts; but it was only in the reign of Henry VIII. that the navy of England was first adapted to oblique courses, and this only on favorable occasions.

It is, therefore, due to improvements, both in rig and model, since that time, that modern success in sailing to windward has reached its present degree of perfection: so great, indeed, has been the change in the forms of vessels and seamanship during this period, that an object which was not deemed to exist in possibility by ancient ship-builders, has already become a main one in the models of modern shipping. This is not the only instance of a revolution in the art of navigation on record in the past. It is well for conservative minds to bear it in memory, that none among the greater arts of mechanicians have undergone more or greater changes in order to meet the wants of mankind than the great and growing art of building ships—the white-winged vehicles of modern commerce—and greater changes lie in the future. With regard to land or civil architecture—the erection of temples, edifices, and kindred structures, the ancients may be said to have been masters of the art, and to have written text-books for the moderns. Not so with ship-building; its masters live in our own age. The same is true of navigation. Many of the most momentous problems of Marine Architecture still lie unsolved, indicating a state of expectancy on the part of the intelligent mechanic, who is still thrown upon his skill and originality to carve out his *models* from the rough block. This condition of art stimulates genius; and wherever ambition, taste, and talent, have been bestowed, the builder is found with an elevated ideal of THE SHIP—the dashing, proud, majestic thing of life—the noble steed of commerce.

On the importance of securing *lateral*, or broadside *resistance* on vessels, nothing satisfactory has been writien by foreign authors, while little has yet been printed at home. This property, it is true, has been ably discussed in connection with the location of propelling power,* but the means of securing it in modelling and building vessels, we think, will admit of further canvassing. We shall, therefore, endeavor to excite a few reflections upon this subject. Of the many points involved in the model of a sailing vessel, no one is of greater consequence than a large amount of lateral resistance, inasmuch as in this property lies the very basis of advance in oblique sailing, or in working to windward. Reduced to the simplest form of expression, the design of a windwardly vessel consists in reducing the transverse resistance to the lowest possible limits, and increasing the lateral resistance to the highest attainable point—both objects being secured by the most suitable *form* and *dimensions*. It is a mistake to suppose that sails can possibly be cut, or a vessel handled, to sail *well*, "by the wind," if she be so constructed as to lack quality in this essential particular. It is not without reason, therefore, that the most extreme and labored efforts have been made of late years to solve the problem of this desirable element of perfection in combination with an acute angle of transverse resistance. The construction of "clipper" vessels has diffused the efforts, while it has afforded the widest scope for modelling skill. Yet it has often happened, in the whetted emulation of ship-builders, that very unequal ingenuity has been manifested in the design of vessels calculated to distinguish themselves equally well on all points of sailing, being quite as well adapted to resist the leeward force of the gale, as to fly before its direct propulsory power. The reduction of transverse, or direct resistance on the bodies of vessels has, in some cases, been made at the expense of weatherly elements of model, and, consequently, unnecessarily subtracted from capacity for cargo, while the single-handed advantage of speed with fair winds has failed to compensate in brevity of passages for the manifest loss of buoyancy. In shaping a model, no matter what may be the object of the design, we should be mindful that buoyancy constitutes our stock for profits, and should never be given, or cut away, except for an equivalent.

Our observation and experiments in building, teach us that in designing "fast" vessels, the *lateral* resistance should be increased, not only in direct proportion to the decrease of transverse or direct resistance, but also in the same proportion to the enlarged area of sail—the usual cut of a swift sailer. Whether in steaming the ocean, or in sailing, it is in maintaining a *high average* of daily distances that the speedy voyage is accomplished. By far the most trying occasion for making a passage is in sailing oblique courses, when, if a vessel falls behind in making "distance" during a few weeks, or days even, of adverse winds, an apparently duller, but more windwardly ship, may accomplish a voyage in the same space of time. In the perusal of

* See Griffiths' "Ship-builders' Manual," 1853.

"Abstract Logs," or from observations in sailing, one will be struck with this fact, that certain ships of celebrity, under favorable points of wind, have sometimes been overhauled and passed by inferior sailers, when Boreas blew his blasts from another quarter.

The direct and lateral resistances of vessels should, therefore, be designed proportionate to each other, and to the buoyancy; and the propulsory power to all. It has been laid down by mathematicians, not sailors, that the ratio of the transverse, or direct, to the lateral resistance, was in proportion to the respective areas of the greatest transverse and lateral sections. Nothing could be farther from the truth. The form of vessels has so much influence upon their resistance, whether they be propelled endwise or sidewise, that the ratio of resistance which would exist between the end and side of a parallelopiped, or oblong box, in motion in water, is lost to computation. Actual experiments with the models of vessels in water can alone be trusted to resolve it. In observations at sea we have frequent examples of the variable proportions of the direct to the lateral resistance of vessels, not only between different vessels, but in the same vessel under varying conditions of immersion, and with and without the use of artificial contrivances, to increase the sum of lateral resistance by lee-boards and centre-boards. For instance, some vessels work faster to windward when light than when loaded—most of them work best with moderate loading, and a few there are that will do best fully laden. This is owing to peculiarities of model which cause a variation in the ratio of direct to lateral resistance; it would be otherwise, if it remained the same at any given draught of water, and then the performance would only be affected by the increase of displacement—wind and sea as before. In sea-going vessels, generally speaking, the greatest amount of lateral resistance, in ratio to draught of water, is found to be furnished by the keel.

In the case of centre-board vessels, we have the finest of all examples, in illustration of the value of lateral resistance. With only a few inches of outstanding keel, very few vessels of this class will do much "by the wind" when light, and without the centre-board dropped. But drop the board, and they will instantly bring their wake over the *stern*, shoot ahead with new life, and come closer to the wind. Vessels that lack in lateral resistance cannot hold the wind so close as those that have it large; and though they may run all over the sea like a deer startled in the chase, yet they return into the same *beat*, again and again, till the holiday is ended.

Lateral, as well as direct resistance, depends upon the combination of dimensions with form; the latter having, in some cases, more influence than the former. In fact, it may be said that *shape* is the ruling element in all the secrets, puzzles, and problems of ship-building. So far as dimensions are concerned, length is the only one that favors the ratio of lateral to direct resistance under all circumstances; the depth is also favorable, but in a less degree, inasmuch as it more rapidly than any other increases the direct re-

sistance of vessels, and, consequently, reduces the proportionate gain on the broadside; the breadth is unfavorable, under almost every circumstance, while it may, by reducing the proportionate depth, go very far to favor the direct, transverse, or anterior resistance. Keels and centre-boards, therefore, should be deeper, and of more surface, relatively, in short vessels, than long ones, and in broad vessels than deep ones, so far as dimensions are concerned, in order to furnish a due degree of resistance on the broadside.

With regard to form, as it affects the resistance opposed to leeway, our considerations may be resolved into two parts, viz., the influence due to the horizontal shape of the broadside, or the form of the water-lines; and that belonging to the vertical shape of the body, or the form of the transverse sections. In plain terms, for an exposition of the lateral resistance of vessels, we refer to the half-breadth and body plans, or to the model (in which the projection of stem, keel, stern-post and rudder, must be made), in the same manner as we do to ascertain the direct resistance (in the line of the keel), only in the latter case we imagine the vessel to be driven forward, and in the former we must regard it as, when under the pressure of sail, it is forced *sideways* against the fluid. Lines and surfaces offering the greatest resistance, are, of course, those that are vertical, and parallel to the keel, whether found on the broadside, in the entrance or run, or in the keel itself, or centre-board. Convex, or round lines and surfaces, offer less resistance than concave, or hollow ones, and horizontal surfaces offer none. As we have already intimated, the keel, or the centre-board, as the case may be, supplies the greatest share of resistance to leeway. That portion of the mere body of the vessel below the bilge can offer very little to the fluid, being an inclined plane with few vertical parts. It has, however, been supposed that *dead-rise* necessarily increased the lateral resistance; but this is not true, except under certain circumstances, of which the following are chief, viz.: when *dead-rise* increases the draught of water, and at the same time reduces the displacement, and also straightens the form of the immersed water-lines; and cotemporary with these, when the ballast, or cargo, is of the dead-weight kind, adding stability, and when the breadth is only moderate in proportion to the length. In most cases, we consider *dead-rise*, as such, detrimental to lateral resistance, inasmuch as a better *shape* may be evolved within the same limits of displacement. If it be generally conceded, as we believe it is, that longitudinal vertical section lines, or buttock and bow lines (as drawn in the sheer plan), are rendered *easy* by increasing the angle of rise at the floor, and thus the direct resistance of vessels is reduced, will not the truth of the same reasoning and facts become apparent when applied to transverse vertical section lines, (as shown in the body plan,) especially under the inclination of sail, when this power is applied at sea?—for there is a lateral as well as a direct velocity. Again: in discussing the influence of dead rise, we should not confine our ideas of its influence wholly to the angle of rise given to

dead-flat or the midship frames; the *average rise of the entire floor*, fore and aft, must come into account, when it will be seen, that our favorite dead-rise, fixed at midships, becomes greater than we had bargained for; and contrary to the crude rules of custom, we discover that the *mean* angle of dead-rise alone, can give us a correct idea how sharp vessels are in the floor transversely. The mean dead-rise may be the same in several vessels, while between the extremes, by one of which ship-builders have hitherto judged, the widest difference may be found in the fore-and-aft rising curve, and, consequently, "dead-flat" might show very unequal "rises." If the rise of "dead-flat" should be equal in another number of vessels, it would be called so in describing their floors, while the mean rise of all might vary very much. The rise of dead-flat is not, therefore, a true exponent of the dead-rise of vessels. We have been led to these remarks upon hearing persons endeavoring to account for the difference in the lateral resistance of two vessels upon the hypothesis of dead-rise: one holding that to this property the superiority of his vessel depended, while, in fact, owing to the models, the *mean* dead-rise differed very little, although a large difference could be found at midships. The secret of superiority lay in a greater draught of water, straighter side-lines, and a larger centre-board in proportion to displacement, and more canvas.

In contrast to dead-rise, the flat floor, short bilge, and vertical side, transversely; and the long midship body, moderate beam, or rather, great proportionate length, hollow lines at extremities, and the floor carried well fore-and-aft, (without much dead-rise,) longitudinally, furnish the greatest amount of lateral resistance from shape, as vessels are generally proportioned. It must also be borne in mind that the influences of *form* and *dimensions* are not always united to enlarge the amount of lateral resistance; but on the contrary, upon examination of models, we find that well-chosen dimensions are frequently counteracted by form, and *vice versa.* This discrepancy will account for the leewardly qualities of some sharp vessels, whose performances indicate that a mistake has been made in the model.

Some good shapes for diminishing the direct resistance also diminish the amount which should belong to the broadside; and, in seeking a good form for speed, we should have to repudiate the adoption of some of the best-shaped surfaces which might seem desirable for lateral resistance. This being the case, we should seek for our desideratum, mainly, either in the *keel*, or the *centre-board*, after having chosen favorable dimensions, in harmony with other important elements of design. And here we would say, that "Maskell's Slide Keel," or any other similar device, might, with advantage, be adopted on nearly all keel vessels. It is not light draught vessels, only, that are deficient in a proper proportion of lateral resistance. An extra foot of keel would often be of more advantage in a voyage than a thousand yards of canvas, or a displacement shorn of a hundred tons of buoyancy.

With regard to the location of the resultant of lateral resistance, or its centre longitudinally, it should always be found abaft the centre of length. The resultant of direct resistance, when a vessel is in forward motion, causes it to appear forward of the centre of buoyancy, because the effects of both are then combined, and, consequently, the sail must be located there to correspond; but were the vessel in motion sideways only, the centre of lateral resistance, simply, must be found in the after-body. In this requirement, found necessary in vessels under canvas, we have the secret of all the utility which exists in giving a finer form to the posterior ends of vessels than to the anterior;—the idea of doing so, in order to reduce the negative direct resistance, or to make a vessel run swiftly forward, is a mistake. Half of the same amount of buoyancy, taken from the displacement of the bow, would accomplish this object far more effectually. And we would add, that in proportion as the anterior end of vessels is sharpened, the less need is there for a "long run, aft;" in other words, when the "run" is made too short, forward, one must be made too *long*, aft, to amend the fault. This type of model appears to have been chiefly introduced by CHAPMAN, the celebrated Swedish naval architect, in the navies of Northern Europe, and since his time adopted by the British, in preference to the old French bodies, which had been for many years the chief guides of the English ship-builder. The American model, as approved in this country, not only for speed, but burthen, can be better compared to the French type than any other. "The marked characteristics of the old French body were a flat floor, with a sharp, and beneath the water, hollow forepart, and a comparatively very full after-part. The character of the Swedish construction is the rising floor, full fore-body, and extremely fine after-body."

By the light of this discussion, we think it may be discovered why "lengthening" a sailing vessel usually improves her performance, not in free, but oblique courses; and these are the *working* obstacles of the voyage. This operation, one which we do not generally approve, increases the ratio of lateral over direct resistance very fast, and it is this excess which is indispensable in sailing vessels to enable them to gain to windward by the manœuvre of tacking by the wind. Steam vessels require least of this property, but frequently have more than sailing vessels of the same tonnage. In beam winds, however, steam vessels are liable to make lee-way, and this quality is a great advantage, even to them.

NEW GUN AND MORTAR BOATS.—We understand the Admiralty are making extensive arrangements for building and equipping a numerous flotilla of gun and mortar boats for next year's campaign. Messrs. Briggs, of Sunderland, have just laid down four of great length and light draught, to be fitted with screw-propellers and heavily armed. Messrs. John Scott and Sons, of Greenock, have laid down six mortar-boats, to be ready by March next. They will be about 70 feet in length, of light draught, and armed with 13-inch mortars, fitted on a patent platform placed amidships, and will be rigged in the cutter style.—[*London Artizan.*

PAPERS ON NAVAL ARCHITECTURE.

(*Continued from page* 188.)

WE nave just spoken of the height of the topsides above the deep load-line; this necessarily brings up the question of deep-ships—deep in proportion to the breadth. Deep ships are undoubtedly the most profitable to the merchant under the present system of tonnage. It, in fact, offers a premium for the deepest ships. The insurance office, also, offers a premium by giving the preference to the deep ship, because she will not have so much repairs on hull or spars, or be so likely to accident in heavy weather, for the reason that she has not stability enough to do any mischief;* consequently, the merchant consulting his own interest, which he should, prefers to carry two or three hundred tons of ballast for ships for short voyages.† But for long voyages, the reverse is proved beyond a doubt. I mean by this, that the ship which is most profitable for long voyages, is the fastest, still uniting carrying powers in a good degree. The experience of the last five years has fully solved the problem of how far a merchant can go in building ships, even for long voyages; proving also that ships can be built too sharp, even for speed;‡ witness the Great Republic and Sovereign of the Seas. The increased sharpness of these ships does not begin to give the ratio of speed which it should, compared with the loss of capacity; consequently I pronounce such ships to be failures. Should Mr. McKay, the builder of these ships, be called upon to build the same ships over again, he would not do it upon the same dimensions, provided the form remained the same. These ships, and others like them, are entirely too sharp for sailing ships; the best results can be obtained with much less sacrifice of capacity than was obtained in their cases.

We have also been too apt to leave out the length of the ship when taking account of the stability. It is true that breadth with reference to the depth is the most important of the principal dimensions in this analysis, but certainly length has a very important part to take, as we find out to our complete disappointment, when we carry it to extremes. It is a great mistake to suppose that length adds much if any to the stability of any fabric, other dimensions remaining the same; with every increase of length we decrease our stability, because the centre of all the weights is raised higher, and the bearing of the immersed portion is not increased in the same ratio as weight aloft increases. In order, then, to get the best results, we must take all our dimensions into account in constructing.§

Now we know that for carrying cotton we want a light draught, and stabil-

* It is deformity and not stability that does mischief.—[EDS.

† He prefers to carry ballast because he does not understand the true principle of displacement and resistance.—[EDS.

‡ We think not.—[EDS.

ity enough to carry our sail well in all weather; for carrying iron we want but little stability, and for carrying passengers, we want all the deck-room possible.

How shall we obtain these qualities in our ship, for she will be required to be good in these three qualifications? The dimensions we have assumed before must be erroneous, as they will not give us all these qualities combined, no matter what form we assume. Why have we assumed these dimensions then? Merely because our tonnage laws say they are very profitable to the owner. But it is to be hoped by every well-wisher to the science of Naval Architecture, that our tonnage laws will soon be altered in such a manner, that the actual capacities of all ships for carrying cargoes will show their only register; and to every register let every builder furnish a correct scale of displacement, which will show the actual weight on board, at any draught of water. Let the law, also, limit the draught of water, which should not exceed, in any case, half the extreme breadth of the ship above the top of the keel, as usually the strength of the fabric is capable of bearing a heavier load than even this. Now suppose the present tonnage laws to be done away with, what then would be the form most likely to be at once assumed for ships of this class? Anticipating that such will soon be the case, we would say what we think could be safely recommended for a ship to combine all these qualities. We want a wide ship, in proportion to depth, with a very easy bilge, with little or no rise to the floor, with as much length, in proportion to the breadth, and strength, and a sufficiency of stability, and ease of working will allow; we would give her a hollow or concave bow, in order to have a good steering ship, with the lines all rounding to the stern post, both horizontal and diagonal. Our great length would not render it necessary to have our ends too full; still I would not recommend having the lines inside of an angle of 30° from the centre line, for a sailing ship at the load-line, as I do not think anything is to be gained thereby, especially in this class of ships. Suppose we assume the dimensions which we presume to be adapted to the form just described; length, say 210 feet at the water-line; breadth, 44 feet; depth in hold, 24 feet, and we would have a ship constructed to carry say 118,000 cubic feet. From comparison, and our present experience, we would locate the centre of buoyancy at about $\frac{1}{30}$ of the length forward of the centre in sailing ships, at which point, or a little forward, we would fix our widest part.

From the form and dimensions which we have assumed, we could be sure and have stability enough, especially if we keep the breadth well up to the load-line, and the lines will have breadth enough near the ends, for it is the mean proportionate breadth of the whole model which gives us stability;* having reference to the other dimensions, and having the lines constantly increasing in capacity, from the keel to the deep load-line, we will insure a safe, stiff, and easy ship. All our past labor and practical experience in re-

* Stability demands that the breadth should be confined to the centre of length, with sharp ends. —[Eds.

gard to stability, has had greater reference to dimensions than form.* Now we know that upon the dimensions first assumed, 180.36 and 23′ 6″, that the form we have proposed would not answer; this ship would not have mean breadth enough upon her lower-lines to support the topsides, and would consequently be very crank. We want for such dimensions extreme long floor—both wide and long—carried into the extremities, otherwise the ship would be very crank, and not adaptable to her purpose, without carrying a great amount of ballast; and such a ship is, necessarily, very slow, both in sailing and working, and not adaptable to these fast times.

(*To be Continued.*)

THE TIMBER EXPERIMENTS AT THE GOSPORT NAVY YARD.

THE disappointment to the scientific department of constructive art, consequent upon the loss of information, occasioned by the abrupt termination of the timber experiments at the Gosport Navy Yard, cannot be fully appreciated by the present generation. In a new and great timber country, like this, where scarcely anything is known of the peculiarities of the forest growth, it was a wise measure of the Government to set experiments on foot, for the determination of those laws, connected with *climate*, *season* and *place*, which govern the durability of timber used for all the purposes of constructive art, and which secure it effectually against the ravages of time when in air, and the *Teredo*, when submerged in salt water, whether at sea or in port. Experiments had been made, in Europe, at different times; but so imperfect was the system upon which they were conducted, that they were of scarcely any avail, even to our transatlantic friends, and were not of the least use to the mechanics of the United States. The Government was singularly fortunate in having a man in its employ, Mr. James Jarvis, whose experience, in those kinds of timber used by the Government, has no equal in this country, to whom was entrusted the important task of experimenting, and after having made the most important and valuable discoveries, both in the season and manner of preparing timber, and after having prepared for the developments of at least a quarter of a century to come, which, it was expected, would have been the embodiment of yearly reports, we find that interested parties have caused the frustration of the whole design, and the loss of a knowledge of the unrecorded facts and circumstances, under which, between two and three thousand pieces of timber are under experimental treatment, many of which are in the bed of the river, must serve to show the importance of the services being rendered, which were extra duties, and for which he received no compensation. The world owes a debt of gratitude to Mr. Jarvis, against whom no charges can be sustained, and against whom none have been preferred, his removal being a political demonstration,

* The form will furnish the dimensions, but the dimensions will not furnish the form.—[EDS.

by interested parties. We have, by permission of the Bureau of Construction, Equipment, etc., published, in the first and second volumes of the "Magazine," the results of some of the experiments, and have now the pleasure of giving an abstract of one of the Reports to the Government, which will show the value of the experiments then about to be made, and which have so wantonly been destroyed; also, the copy of a letter to the Chief of the Bureau of Construction, Equipment and Repairs, relative to the results of experiments and suggestions, for their extension, which will be read with interest by all who are mechanically or commercially interested in the preservation of statistical knowledge in this department of the vegetable kingdom.

"PORTSMOUTH, VA., *Dec.* 12*th*, 1855.

"GENTLEMEN:—The following is an extract from a Report, made by me, to the Government, October 30th, 1847:

"U. S. NAVY YARD, GOSPORT, VA., *October* 30*th*, 1847.

"SIR:—Agreeably to your direction, and in conformity with a letter from the "Bureau of Construction, Equipment and Repairs," I submit, for the consideration of that department, the following remarks, with regard to the felling of timber.

"I have, heretofore, made efforts to invite attention to this subject; and I am pleased and flattered, that a Report recently made by me has been noticed, and that what I may say will be duly considered and appreciated. Having, for the last thirty years, been the Inspector and Measurer of Timber for this Yard, with the privilege, during ten years of that period, of inspecting it in the forests where it was cut, it cannot be doubted that I have often reflected as to the proper time of felling it, with a view to its preservation and durability, and that I have made many scrutinizing observations on the subject. And, although I have frequently consulted theories, with the view of applying the test of experience, I make no pretensions and lay no claim to the learning of the naturalist; my object, in this Report, is to confine my remarks to the great staple of timber, as used in our Navy, viz: live oak, white oak, and yellow pine; and to reach the conclusion, through the medium of frequent observations and practical knowledge. My experience teaches me, that the best time to fell timber, in this climate, (Virginia,) is between the periods of the Autumnal and Vernal equinoxes, commencing about the 10th of October, and ceasing about the 1st of March, regarding Virginia as central to the States of our Atlantic border. I suppose that those States north of her might commence a little earlier, while those south of her should commence a little later; but in no part of the country should it be commenced before the 1st of October, or continued beyond the 15th or 20th of March. And here I would remark, that the *time* of felling timber is not all that is necessary to be considered, in view of its durability. As soon as the trees are cut down they should be hewn to a

square, or to such a form as the contract requires, so as to *remove all the bark*, for, however we may have regard to the circulation of the sap, before the tree is taken from the stump, it must be remembered, that the circulation does not entirely cease when the tree is felled; and if, as is confidently asserted by physiologists, it is difficult to know at what moment life becomes extinct in the animal subject, it is much more difficult to know at what time it ceases in the vegetable subject.

"The sap still continues to flow, and, perhaps, imperfectly to perform its functions, between the *bark* and body of the tree, after it is taken by violent hands from the spot where it was cradled, and by a slow process of decomposition becomes the true source of injurious effects to the timber. The *bark must* be removed, or this process must, and will, commence and continue its destructive course. All the theories that I have read upon this subject agree as to the fact, though not as to the time, that the bark should be removed; and I can safely say, by practical observation, that their truth is confirmed. Notwithstanding this, *I have never seen contracts so framed, as to make it imperative to have the timber so hewn, when cut, as to remove* this great source of injury. Many of the officers of our Navy have doubtless witnessed, in the Mediterranean service, perhaps in a store at Malta, Naples, or Port Mahon, the evils, together with the cause, above stated: they have seen the destruction of barrels, stowed with hoops, *unbarked;* and spruce spars, in the same condition, destroyed by the dry-worm, which had its origin betwixt the bark and timber. Here my practice is, to keep all spruce spars, with the bark on, *under* water, or they would be an easy prey to the dry-worm. Dr. Walker, who was formerly Professor of Natural History in the University of Edinburg, found that the sap of the tree ascended through the wood, *but still more copiously, between the wood and the bark.* A celebrated naturalist says, "that a tree will grow in an inverted situation, the roots being placed upwards, and the top downwards and buried in the ground; for then the branches become roots, and the roots will bear leaves." And this is true; but *strip* the *bark* from the same tree and the circulation of the sap ceases, its luxuriant foliage perishes, and, although under a meridian sun, no leaves or flowers will be produced. The views presented by Mr. Tredgold (and he wrote copiously on this subject,) are worthy of insertion here. He says: 'the best period for felling timber is undoubtedly that *in* which it is most free from extraneous vegetable matter, or such matter as is intended to be expended in leaves and buds, and which is in a more fluid state, and of a more saccharine and fermentable nature than the proper juices, or such as form the wood:' and he adds, that the best for that is mid-winter, or mid-summer, as at these times the vegetable powers are at rest, or have expended all the most changeable parts, in producing leaves, etc. 'The bark,' he says, 'is too valuable to be lost, and as *the best period* for the timber is the *worst for the bark*, an ingenious method has been long practiced, which not only secures the best season, but im-

proves the timber. This method consists in taking the bark off the standing tree early in the spring, and not felling it until after the new foliage has put forth and died.'

"Mr. Buffon says: 'he has ascertained, by experiment, that the wood is materially improved by the met od of barking.' Tredgold gives the key to his real opinion in his concluding remarks. It must be remembered, that he wrote in England, when bark was exceedingly valuable; and it is sometimes difficult for his readers to determine, whether he was most in favor of saving the bark, or preserving the timber. But he speaks for himself, in the end, by saying, 'where the bark of the tree is not sufficient to pay the expense of stripping, it should be felled during the months of December, January and February.' And in this he concurs with Knowles, who preferred the winter months, because the timber then felled was less liable to split and twist. It is manifest, that this bark, in the spring, so frequently spoken of, and sometimes recommended, by English writers, (*Richard Pering, Esq., of the Plymouth Dock, England, excepted,) was a sort of compromise between timber and bark, in which the value of each was consulted. There was a time, in England, when trees were stripped in April, as that is the season when bark '*rises*' more freely, and this practice was supported by statutory provisions, made for the advantage of tanning. For no other reasons, in the world, was timber stripped of its bark, at the season above stated, and made to die a lingering death, while the sap was flowing through all its pores. The bark for the tanner, and not the durability of the timber, was the object. Who ever heard of pine bark (which is not valuable for tanning) being stripped from the standing tree, either in Sweden or the British possessions in America? I might go on to quote authors who have written on this subject, as far back as Pliny, but I should make this communication too lengthy; and, besides, I should have but little confidence in my own experience, if I did not regard it as worth more upon the subject of this Report than any *theory*.

"One of the writers, whose name I have already introduced, states that, as long ago as 1669, a royal ordinance, in France, limited the felling of naval timber between the 1st of October and 15th of March, in order to make it more durable. Bonaparte *directed* that the time should be abridged to the 1st of November and 15th of March. With the latter, I would agree at once, as a *general* rule, adding that, as *soon* as the trees are felled, they shall be put into forms required for the Navy, so as to *exclude the bark*, not a fibre of which should be left on the timber. The middle of December being about equi-distant from the Autumnal and Vernal equinoxes, *is* the period when the tree *is* most free from vegetable matter, and as a large quantity of timber cannot be felled at any given point of time, not even in a month, we

* He gave his views as late as 1812.

must approximate as near to that point as we can, never forgetting the *bark.* I know that winter-felled timber is superior to that cut in spring or summer; I have noticed that cut in the later seasons and brought to this Yard; it would be here but a few days, before I could discover concretions, such as mould, black sap-wood, mildew, and after awhile, large *fungus*, and other signs of decay. Saw stocks open, of this description, into plank, (if kept on hand a length of time,) and if of white oak, the inside is heated and has a reddish, sickly appearance; it is fevered, and unfit for the Navy. If the timber be pine, with the exception of the fungus or mildew upon the sap-wood, the stocks will look very well; (but after the stocks have been on hand some years,) saw them into plank, and spots, snuffy specks, may be seen; so soft, that they may be picked out with the finger-nail. In both cases, the *dry rot* has commenced, so that with or without bark, the spring and summer-felled timber is doomed, (it may be only partially,) to speedy decay. It is curtailed of its durability. I have also to note that a parcel of cypress roots, which were felled last winter, and brought to this Yard with the bark on, and one side hewn flat to within three feet of the butt, gave evident signs of life during the spring—a life, however, which indicates a premature decay; they were planted three feet in the earth, as columns, to support a temporary timber-shed, at the south end of the Yard, and soon sent forth small and beautiful branches of verdure. There is evidently an intimate connection between heat and the ascent of the sap-juices; but it is equally evident, that the *bark* is as necessary to the continuous circulation of this juice as heat, and that, without it, the sap, with its injurious effects, ceases to flow.

"I beg leave to report, however, that my conclusions upon this subject are the result of observation and experience. Theory may err; systems of reasoning may deceive; but long, close and scrutinizing observations, with the tests of practical experiments, can neither err nor prove deceptive. These tell me, with a voice too potent to pass unheeded, that WINTER *is the time for felling*—and that when the tree is torn from its birth-place, to be converted to the uses of timber, it must be deprived of its lingering vegetable life; its juices must no longer be permitted to circulate; it must be disrobed of its outer matter, that it may the better endure the new form and condition to which it is to be appropriated by the hand of man.

"I beg leave, now, to call the attention of the Bureau to another subject. The exports of timber, together with the quantity consumed in the United States, for ship-building, has materially diminished the forests on the seaboard. The Government has yet to commence the cultivation of the white oak. Something has been done, I believe, towards this great object, in the cultivation of the live oak. I am satisfied, that the time is not far distant, when the importance of cultivating, not only the live oak, but such other forest trees as may be necessary for the use of

the Navy, will be too palpable to be overlooked. White oak, locust and cedar, all of which are important in ship-building, are fast disappearing from our Atlantic border, and getting at a considerable distance from the ocean. 'Individuals will not plant forests for future gain: private capital, in our country, is limited, and the demand upon it too urgent, for profits so distant. Individual enterprise seeks such an investment of money and labor, as will bring a speedy return of profit or reward.'

"Lands could now be purchased, by the Government, in Virginia and Maryland, at a very low rate, and the white oak of these States is of the very best quality—as good can be produced, from lands that are lying waste, as ever grew. Timber plantations are preferable in those States whose shores are washed by the salt water. The timber growing in the region of salt water *is*, in my opinion, far superior to the porous and brittle oak of the western lands, or such as are obtained on the borders of Lake Erie, and other lakes and fresh water rivers in Virginia or other States.

"The experience of England urges upon (us) our Government the importance of giving *early* attention to this subject. All have read of the forests of England and France—their great productions—so as to make it useless to refer to books on the subject.

"I am, sir, most respectfully, your obedient servant,

"JAMES JARVIS."

"U. S. NAVY YARD, GOSPORT, *March* 14*th*, 1849.

"SIR:—Whilst Capt. Beverly Kennon was the Chief of the Bureau of Construction, Equipment and Repairs, I proposed, as an experiment, that sheathing paper, dipped in warm tar, having the surface filled with pulverized charcoal, should be used. The charcoal would adhere to the tar, the tar to the paper, and the paper would be fastened to the timbers of the ship by the plank pressing it close to itself and to the timbers, (both sides of the paper being filled with the pulverized charcoal,) would be the cause of checking, if not entirely destroying, the fungus which constantly appears on the inside of the plank and the timbers, when ships are stripped for repairs.

"I have no doubt you have seen a fine, white, thread-like vegetation, on the surface of the plank which was next to the timbers, and also on the timbers next the plank: this excrescence is what I call a white-spangled fungus; under this there is always rotten wood; it emits a musty smell. The white-spangled fungus has been caused by dampness, which could not have been produced, had there been an abundance of charcoal placed betwixt the wood: by an abundance, I mean enough to keep the live oak from touching the white oak or yellow pine. At this moment, whilst I am writing, the workmen are taking the white oak blocks from under the keel of the ship-of-the-line, New-York: all the blocks, where they touched the keel,

are filled with thread-spangled fungus; had charcoal been placed on the blocks where they touched the keel, the keel and blocks would, I do believe, now be sound and as free from decay as the keel is *betwixt* the blocks. The above facts I now relate, in order to call your attention to the proposal made by me, relative to experiments. I am sure, when the Government appoints some person (myself, if thought worthy,) to superintend the timber business, both as to inspection and experiments, that a great and lasting benefit will be felt by the Government. That a system of experiments will be of great service to the Navy, I have no doubt; and to railroads and large public buildings, invaluable.

"Experiments can be tested in the bread-rooms and magazines of our ships, and can be examined when they arrive from long voyages, the moist parts of the ship noticed as well as the dry and exposed parts. Here will be a field for philosophy; under the head of experiments, a large amount of valuable information will be obtained; for if I have anything to do with it, the Government will certainly be fully compensated for the trifling cost which will be incurred, or I shall be much under a mistaken opinion.

"I have said before, heat and moisture, moisture and alternate dryness, wetness, dryness, all manner of decay, sap-wood compared to heart-wood, trying substances to resist moisture, using substances to prevent the 'Teredo,' or *marine worm*, as well as the *dry worm;* to watch the decomposition of timber; to observe the dry rot and wet rot; to do all in our power to name the difference betwixt them; to endeavor to find a preventive of decay in timber; to make free use of all substances supposed to be in any way effectual in the preservation of timber, such as paints, oils, corrosive sublimate and other salts, coal tar, common tar, carbon, spirits of turpentine, sulphate of iron, chloride of zinc, amongst the salts used, and all other substances which may be now or hereafter known to exist, which may, by application, be a benefit to timber. To have felled in *each month* of the year live oak, white oak and yellow pine—a part of the trees to be hewn square, a part to be left in the round *in bark* when first felled, the whole of said trees to be subdivided, so as to be made portable, that the pieces may be used in many different experiments; the specific gravity to be obtained of the three kinds of timber each month. The pieces hewn square (oblong) be measured each month, to get the shrinkage. That tanks be built to receive the solutions and timber. All of the above, if adopted by the Bureau, will be much better regulated than I can vainly hope to endeavor to do.

"The system of Inspection which I was authorized to write out for the approval of the Bureau of Construction, seems to give general satisfaction.

"Should an order, in accordance with the above propositions, be now given by the Government, no man can foresee the great advantages that *must* take place by the experiments, because the difference of measurement as to shrinkage, the specific gravity, together with all the changes which may

occur, and all faithfully recorded, will be valuable to the Navy, to the commercial world, and to rail-road companies.

"These, sir, are the outlines of a proposition—under your direction the business can be brought to perfection.

"I am, Sir, most respectfully,

"Your ob't servant,

"JAMES JARVIS,

"*Inspector and Measurer of Timber.*

"*Commodore* CHS. WM. SKINNER,

"*Chief of the Bureau of Construction, &c., &c.*"

ON THE DETERMINATION OF THE SPEED AND LEE-WAY OF VESSELS.

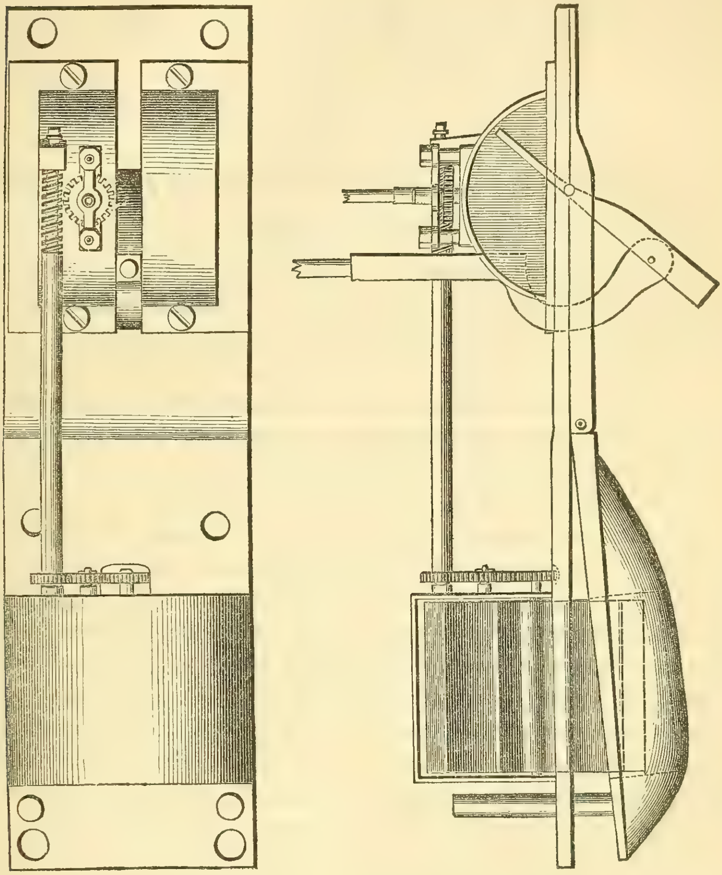
THE more correct determination of the speed and lee-way of vessels has been regarded as a great desideratum among nautical men, and by this remark it should not be inferred that nautical men were alone interested in the solution of this important problem in science and art. The necessity of a more reliable mode of determining the speed of vessels, than that which is furnished by the *Log*, has not been questioned by those who are intimately connected with maritime pursuits. If there were no other reasons than those which point to the improvement of the qualities of vessels, these in themselves would be quite sufficient to induce an effort to facilitate the means of providing for their safety; inasmuch as the safety of the vessel implies greater security to *human life*, as well as to the valuables making up the cargo. The state of perfection to which practical or Nautical Astronomy has been brought, may be regarded as one of the greatest triumphs of human reason. The motions of the moon and the planets are known with the utmost accuracy, and tables have been provided which possess all the precision the nautical astronomer can possibly desire; indeed, our knowledge of the planetary system may be regarded as complete, while that of the sidereal heavens must always be limited by the optical powers of the human eye and the telescope. Science has provided every facility for determining our place and position on the globe, when an observation can be had, and it would seem that it only remains necessary to inquire what are the provisions of art for finding our whereabouts on the ocean during the most difficult season of doubt and dismay; or, in other words, when forsaken by sunshine, and enveloped in darkness of night, or by clouds and storm by day. In nautical parlance, *Dead Reckoning* is the term used for determining the position of a vessel, without having recourse to an observation of the celestial bodies. This computation is made by observing the headway made on the course on which the vessel has been steered by the use of the Log, allowance being

made for *drift* and *lee-way ;* and in this connection we may add, that it is quite presumable that no two navigators would make the same allowance, without referring to usage, the accuracy of which is indeed questionable at best. The Log itself is extremely liable to inaccuracies from a variety of circumstances, and always leaves the navigator in doubt as to his true position, or the distance sailed ; the heave of the sea, as it is commonly called, the manner of heaving the Log, the holding of the reel and the glass, are all contingencies for which allowance must be made—these should find no advocates on ship-board. By the use of the Log for the determination of the speed of the vessel, the mariner is often subjected to false distances, particularly in squally weather, even though there be no errors in the Log-line or glass, and the allowance for lee-way and variation be correct. In fast-sailing vessels, the distance run is often estimated, and the Log seldom hove, and as clipper ships steer well, their course can be depended upon ; and inasmuch as the distance run and the departure made good, can be obtained by a case in plane sailing, even more correct than if the distance had been measured in the usual manner by the Log, it is regarded as being of less importance to the navigator. The progress of science has also brought the Log somewhat into disrepute in another direction. On board of ocean steamers, particularly those propelled with paddle-wheels, the Log is found to give too much distance ; this is caused by the action of the wheels in driving the water astern ; nor can a proper allowance be made, inasmuch as there can be no determinate number of revolutions for the paddle-wheels, or defined measurable force to the current thus created. It has been thought by some, and practised by more, that the paddle-wheel boxes, or wheel-houses, as they are denominated on this side of the Atlantic, is a locality from which, if the Log be hove, will be entirely free from the influences of current thus generated. This, however, is a mistake ; the lubricity of the fluid causes the influence to extend far beyond the proper distance for heaving the Log, and even though the Log might be hove clear, it is plain that it forms an angle with the vessel's course, and, as a consequence, can be of no advantage unless the angle could be determined with more than an ordinary degree of accuracy. Thus we see, that by the force of circumstances and the advancement of science, that which may have been regarded as an invaluable aid in the various departments of human industry, may speedily become useless, and suitable for the shelves and cases of a museum, to be exhibited as one of the relics of a less advanced stage of civilization. Nor should we conclude that, when the Velocimetre has superseded the Log, that the catalogue of improvements is quite complete ; there is at this moment a wider field for improvement in the various departments of construction and instruments for navigating vessels than in any other branch of human industry ; and it only remains for navigators to cast aside their prejudices, and leave their *fogyistic* notions at the last port of departure, when they will soon find that they will be both

able and willing to endorse our sentiments, which have long since been published, and stand out in drastic contrast with the usages in the merchant and the *customs of the Naval service*, (and which we have no objection to repeat)—*that* " *Ship-Building is yet in its infancy;*" and if this be true, may we not respectfully inquire, if the implements of navigation may not be improved? Nor is it a matter of surprise that improvements should have moved at a sluggish pace, when we remember that the *press*, that great engine of power, which imparts light and motion to civilization in this western world, has never, until within the past year, shed its benign influences on the vast area of ill-shapen prejudices interwoven with ship-building and commerce, which, like a portentous cloud of night, has darkened the waters of every sea. But we have still another improvement to notice, for which we think there is abundant room, which stands intimately connected with the question of determining the speed of vessels. The lee-way made by all vessels: this is the deviation of the course actually run by a ship, from the course steered upon; or, in other words, it is the angle formed between the line of a vessel's keel and the line she actually describes through the water. In consequence of the action of the wind or currents, a ship is generally impelled sideways; this is termed lee-way, and being the effect of the lateral pressure of the wind in forcing the vessel out of the course she is endeavoring to make when close-hauled, it is, as a consequence, the angle contained between her wake and that point of the compass right astern. The lee-way may be approximated after heaving the Log, and before the line is drawn in, by bringing it directly over a half-compass, constructed for this purpose, and placed on the taffrail, the direction of the whole diameter being placed at right angles with the vessel's keel; the angle between the centre point and the point or half points, over which the line lies, will contain the number of points of lee-way the vessel is then making, provided she has been steered steadily during the time of trial; by this method of determining the lee-way, much depends on the man at the helm.

When a ship is lying-to, the usual custom is to take the middle point, or that point midway between that which she comes up to and falls off from; this is taken, as the direction of her head, by compass; the lee-way is then estimated, from the angle of her wake, as before. When it is remembered that the correctness of the reckoning, in a great measure, depends upon a proper allowance for lee-way, it will not be a matter of surprise, that navigators should often find a great disparity between their reckoning and their observation. In conformity with prudential legislation, this Government has acted wisely, in perfecting the charts of our wide-extended coasts; and by the organization of a Hydrography department, the winds, currents and calms, which prevail in different latitudes, have been placed by the genius of a *Maury*, and the power of the press, within the reach of nautical men; thus redeeming science from the charge of indifference to the wants of this com-

THOMSON'S VELOCIMETRE AND LEE-WAY INDICATOR.



The right hand section is a side view of the Velocimetre and Lee-way Indicator, upon the same bed plate, let into the keel or garboard strake flush with the lower side, the head of the page being the forward end of the bed plate, and the Indicator on the after end. The two rods extend through a small pipe up to the deck, where, by a dial plate, they show respectively the speed and lee-way of the vessel. The left hand section shows the width and length of the bed plate, both sections being one third of the full size required in the vessel. Both the velocimetre and indicator are shown to be in position of determining both speed and lee-way.

mercial age, and it but remains for the mariner to apply the discoveries of art to the uses to which science adapts them. The accompanying illustration represents Thompson's Velocimetre and Indicator, for determining the speed and lee-way of vessels: measures are being taken to test their efficiency, to the fullest extent. We forbear to enlarge at present, believing that they will very soon speak for themselves: the simplicity of their arrangement and connexion with the vessel has elicited an interest among nautical men.

TYPES OF TRAVEL IN THE DOMINIONS OF NEPTUNE.

HIS CHILDREN ASHORE.

OVER and beyond the hills which surround Saldanah Bay, at the Cape of Good Hope, are the large pastures and wheat-fields of the independent Dutch farmers, vulgarly termed *Boers* or *Boors*. Their landed possessions are extensive, their farm-houses far apart; they are devoted to the ancient manners, customs, and habits of their Dutch ancestors, and live happily and respectably. In the district of Malmsbury alone, they have not less than 40,000 acres under cultivation. Their ample pastures are covered with thick and sweet grass, on which the cattle of distant herdsmen are pastured in large droves during the grass season, at a charge for each of 40 cents per head per month, during which time the herdsmen in charge live in small mud huts near by, to watch their droves. The wheat-fields are extensive, and it was once in our province to traverse one of these, which was over two miles wide, under such circumstances as to give a fair indication of the true nature of the soil. After a tedious sail from Rio, our first stopping-place from Norfolk, we came to anchor in one of the quiet little bays within that of Saldanah, in order to recuperate our best energies for the long voyage now before us to Hong Kong. Here we feasted on all the good things of the Cape for nearly a week, when our day of sailing was announced to be only 48 hours a-head. It now became us to make the most of it; so we made up a hunting party, and engaged a young farmer, who resided six or seven miles distant over the hills, to be at the beach with horses at an early hour the day before we left.

It was soon after sunrise when we reached the shore, and there stood our *team* in waiting, and a *whole team* it was. A huge covered wagon, in the body of which a couple of old chests were thrown athwart-ships for seats, together with two or three ancient and rickety chairs. Two young Dutchmen sat on the front chest, the one on the left holding the "ribbons" of eight horses in full gear, and the one on the right wielding an immense whip, the staff and thong of which were each some twenty feet in length. Such a "gitten up" into the wagon, was never before witnessed by any one of this party

from the land of the hunters of Kentucky. Perched on the second chest with the captain of the ship, I had a full and fair view of our *turn-out*, as our eight-in-hand pranced off to the wood. There was sport already. A lieutenant, master, assistant surgeon, marine officer, and passed midshipman occupied the other seats, each with his gun and ammunition, together with sundry small comforts in his game-bag, in the way of occasional eating and drinking.

Off we sped, over bog, bush, and bramble, as though a wager were pending on our fleetness. The hard chest-lids were uncomfortable seats, but the crazy chairs were incomparably more so, if their dancing, and the complaints of their occupants are admissible as evidence in the premises. Nevertheless we afforded each other a vast deal of fun, and exchanged mutual congratulations, frequent and cordial, that the terrible jolting we were undergoing was a most excellent remedy for the dyspepsia, and, considering the dose we were taking, doubly effectual—for all that we then had, and for all that might otherwise be in store for us, during a long cruise in the East Indies.

On our road to the hunting wood, about half-a-dozen miles from our starting point at the beach, was the residence of the driver's family—most of the way up hill, and then across an immense wheat-field. Reaching a level range, our clever, and right good-natured conductor gave us a specimen of his faculty in the way of "letting out" his team. I consoled myself with a knowledge of the fact that there was no rock or stone in the way large enough to throw at a bird, yet the *shaking* and *jolting* were awful. I could not refrain from placing my hand on the driver's shoulder and giving him a word of admonition, which only had the effect of exciting his risible faculties to an immoderate extent. The captain, also, entered a word of remonstrance, when the driver pleasantly replied, "you know *ship*, me know *horse*."

In the great wheat-field through which we passed there were some twenty Hottentots of both sexes, reaping and binding the yellow grain. They were in the employ of the driver's father, the proprietor of the premises, and received wages of about seventy-five cents with rations, in part consisting of two bottles of Cape-wine, per diem. They live in huts on the farm, and all their pay, over and above their eating and drinking, is *nominal* only, for the farmer receives all their money in the course of the year for the necessary subsistence of themselves and their families. Their condition is not, in reality, so good as that of the slaves on our southern plantations, for they are certain of support and good medical attendance when sick.

Arriving at the farm-house, we halted for a change of horses—or rather for feeding the team—where we remained an hour or two, and made the acquaintance of the good housewife and her two or three ruddy little children. Visited the grounds about the house, especially the magnificent *thresh-*

ing-circle and the *Kraal*; the former covering one eighth of an acre, with hard clay floor, and a high, thick wall around it, with barn adjacent, and the latter an enclosure for cattle when driven home for inspection.

The dwelling-house was comfortable, though floorless. It consisted of three rooms on the ground, full of old Dutch notions, yet wearing an air of care and cleanliness quite creditable to the madame who presided at the home of her liege-lord; and withal she was handsome, agreeable in conversation, comely in dress and appearance, and one could scarcely believe the fact that she was the mother of the great two-fisted chap who conducted our eight-in-hand, and of some half-dozen others down to "one at the breast." But she was raised in the fresh sea and mountain air of the region she occupied, and had never left it for the miasmatic air of the luxuriant valleys. She was the daughter of a wealthy farmer, and by her marriage had united two large estates—so we were thus hospitably entertained, under the roof, perhaps, of one of the largest and most opulent landholders in the district of Malmsbury. We did not see her husband, as he was at Capetown selling his crop.

It was between ten and eleven o'clock when our horses were again geared to the wagon and we were summoned to mount. Away we bounded for the hunting ground, up hill and down dale, and through the bushy pastures at full speed.

There are seasons when the *Boutebok* or *Spring-bok*—a deer or antelope of medium size—comes in in great numbers from the interior toward the sea-shore, and at such times they are found in these meadows and hill-sides.

We had hoped to fall in with a few head of that noble game, but those we saw were not within gunshot. We dashed about in our wagon with great rapidity, now riding, and then running and deploying off in different directions on foot; sometimes shooting from our seats in the wagon and sometimes from the ground. The best sport at this place was the partridge-shooting, or rather *pheasant*—for it is by this name that we know the same bird in our Southern states. Flur-r-r-r! There! Flur-r-r-r! Up flushes a flock and away they sail—crack! crack! crack!—a half-a-dozen pieces are discharged at them, and down they drop, fair candidates for the bag to which they are duly elected. Weary of wandering on foot, we are all aboard the wagon again, and as we speed along, "whip" surprises us with the exclamation, "A bok! a bok!" as he touches the ear of his off leader. All eyes flash in the direction in which he is hurrying us at race-speed, each eager for the first shot.

The young antelope stands still with his ears pricked up, gazing at us until we reach fair gunshot distance; and then as the team halts for us to fire, we discover for the first time that not one of our guns was loaded with buckshot or ball. Before we could load, he was off through the jungle and out of sight.

This was the only glance we had at the celebrated Spring-bok or Boute-

bok of Africa during the day, though we understood several others were started by one of our companions in his lone wanderings on foot. The *grouse*, or *prairie-hen*, was among the first flying game of the day; and as that large fowl rose from the bush and fluttered away through the air with its peculiar scream, the sport of witnessing the lieutenant's achievements in summoning it to the game-bag by the charm of his double-barreled shot-gun, was nearly equal, if not quite, to that of the lieutenant himself.

A guinea-hen, a hare, and a few doves and pigeons were taken, and we had driven fifteen or twenty miles over the bushy meadows and shrubby hill-sides; and from some of the eminences we had commanding views of the interesting country around us, with the distant ocean and broad expanse beyond. At length, in turning a hill, a drove or flock of the *ostrich* was discovered running across our path at a rapid rate. The excitement was intense. Eight-in-hand and nine inside, we whirled away in the direction they were running, and whipped the team up to its highest point of speed. But these noble birds on foot walked away from us at that, almost as though we were at a stand-still. They were twelve in number, and ran off in Indian file at what may be called a common turkey trot; but their strides were so many rods. At length they came to a halt, and turned and looked at us as we approached them. When within gunshot, as we supposed—too distant as it afterwards appeared—we reined up, and two of our party, whose guns were loaded with ball, blazed away at them. The next moment they were off as the wind—uninjured, but badly frightened. Running before the wind, they seemed to throw up a fan of feathers in a form which facilitated their progress. In a moment they had turned a hill and were out of sight.

This was the grand sport of the day. I had never seen an ostrich in his native wilds before—I had now seen a dozen—had hunted them on their own African hills, witnessed their remarkable fleetness on foot, and in the fullness of my admiration for these noble birds, I was glad that they had escaped the aim of our sharp-shooters.

A large wild turkey rose up before us and flew away to the hill-top, but we were moving too swiftly to get a shot at him. The driver said that they were plenty in that region at certain seasons of the year. Amongst the birds unfit for food, and not worth the powder it would take to kill them, we saw three species of *crows*; the black, the black with white wings, and the black with a white ring around the neck. Millions of these feed and fatten on the 40,000 acres of grain-fields which are cultivated in the district of Malmsbury.

Returning towards the farm-house of our conductor, we passed near an extensive *prairie* or pampa, which we at first took to be the ocean as it spread out beyond the hills. The illusion was complete. The vast blue field resembled most strikingly the ocean as it appears when ruffled by a moderate breeze and overshadowed by fleeting clouds. I had heard of these appear-

ances on our western prairies at home, but had never before seen anything of the kind.

Just before arriving at his house our driver again *let out* his team until each horse seemed to be at sweep-stakes with the others. Heavens! what a jolting! What a shaking up and shaking down! Now over ant-hills, and then rocking into porcupine holes; now over ridges, and then into ruts and ravines! But by the time we had become somewhat used to this rough exercise, our appetites had been well sharpened by it for the smoking dinner that awaited us at the house within sight. As the rickety chairs hopped about the wagon under excess of excitement, our captain touched the "whip" on the shoulder, and reproved him again for his fast driving, but again he turned his good-humored phiz over his right shoulder, and laughingly repeated his remark of the morning, "you know ship, me know horse."

We had dinner, and it was an excellent dinner, eaten with a good relish. Delicious roast lamb, fresh butter and eggs, new milk and cream, with other varieties. And the good Dutch housewife in her neat cap, and plain, comely attire, did the honors of the table with a grace that would have become Victoria at a court banquet. Nor did her constant care for and attention to her aged father, who sat on her left, escape notice, showing that disposition so highly commendable in the good daughter or son, to nourish and cherish their parents in the down-hill of life—to protect those ancient and "brave old oaks" of their family by which they themselves were sheltered and protected in their infancy and childhood.

The sun had but an hour or two more of his course to run that day, when our team was again in harness, wheeling us off to the beach, whence we started in the morning. We arrived at sundown, and found one of the ship's boats in waiting for us. Our driver was to accompany us off to the ship to receive his pay for the day's service. When we were all seated in the boat and she was pushed off from the shore, all her sails were given to a very fresh wind, which made her masts bend to the form of a crescent, and, I must confess, made me shudder a little for our safety. The captain directed the helm, as our "driver" sat pale and motionless, with a look of solicitude, as though he would admonish the captain to take in sail; when the latter, quietly placing his hand on the driver's shoulder, said—"Be not afraid my friend—'I know ship, you know horse.'"

THE DURABILITY OF IRON SHIPS.—The iron ship *Richard Cobden*, which was built at Liverpool twelve years ago, will repay a visit from any one interested in iron ships. She has been twelve years in the East India trade, and has not had the slightest repairs done to her; has never made a drop of water, and will, to all appearance, last to an unlimited length of time. This vessel has completely set aside the old notion of A 1 for twelve years.—[*Liverpool Albion*, *October*, 1855.

INTER-OCEANIC SHIP CANAL VIA THE ATRATO AND TRUANDO RIVERS.*

BY EDWARD W. SERRELL, CIVIL ENGINEER.

For many years attempts have been made by several of the most enlightened governments of the world, and by enterprising individuals, to determine the practicability of connecting the Atlantic and Pacific Oceans *by water*, artificially.

The minds of those who have investigated the subject most closely, and among them the great Humboldt, seem to have rested on three localities, namely, the Isthmuses of Nicaragua and Panama, and the Atrato river.

The latter, probably owing to the considerable breadth of the country, has, until very recently, received but little attention.

During the past four years, however, many very elaborate surveys have been made on its waters and tributaries, and the surrounding country. These examinations have been conducted by Mr. John C. Trautwine, Mr. James C. Lane, and Captain William Kennish, and the several corps under their directions.

They have been undertaken at the instance of American merchants; the expenses of the last two surveys, and of obtaining the rights to construct the works, have been borne by Mr. Frederick M. Kelly, of New-York.

The Atrato is a broad and deep river. For seventy miles from its mouth it has an average depth of forty-seven feet, and the channel-way for this distance is from eight hundred to twelve hundred feet in width.

At the mouths of the river, which finds its way into the Gulf of Uraba or Darien by nine bocas or estuaries, there are bars formed from sedimentary deposits, and the water is only four or five feet deep.

The bay itself is very ample, and deep enough for the largest vessels.

The line for the contemplated connection between the oceans ascends the Atrato sixty-three miles; it then enters the valley of a tributary known as the Truando, which is followed for thirty-six miles.

This river is now navigable for vessels drawing twelve feet of water, for thirty-eight miles from its confluence with the Atrato.

From the Atrato, for thirty-six miles, it is intended to deepen and widen the Truando, and then to make an open cut through rock twenty-five miles to the Pacific Ocean.

The cut will average ninety-six feet deep, excepting a tunnel, three and a quarter miles in length.

It is contemplated to make the prism of the canal, two hundred feet wide and thirty feet deep at extreme low tide.

The river Atrato flows at the rate of about two and a half miles per hour,

*Franklin Journal

and the point of confluence with the Atrato, as determined by Mr. Kennish is 15.2 above mean level in the oceans.

On the Pacific there is a rise and fall of the tide at the outlet, of twelve feet three-tenths. At the mouth of the Atrato on the Atlantic, there is but twenty inches rise and fall. So that when the cut is complete, the Atrato will have two mouths, one emptying into the Atlantic, and the other into the Pacific. The passage from ocean to ocean will be up one mouth and down the other.

The currents in these channels will, on the Atlantic side, be varied but little from what it now is, as the head will be reduced but about one foot, as determined by the comparison of the sections of the streams, and the quantity of supply.

The velocity of the water through the new channel, at high water in the Pacific, will be equal to that which is due to a head of 14 feet, minus six feet one and a half tenths; and at low tide 14 feet plus 6.25; so that without reference to the *flow* of the tide *into* and *out of* the cut, which, however, will equilibriate it, the current in mean will be essentially the same as to the Atlantic, excepting that which is due to greater straightness in the new channel.

All the material necessary for constructions upon the line of the work exist in the country, excepting the metals.

An excellent harbor already exists at the Atlantic terminus, and on the Pacific, but little labor is required to make the harbor there equal to any for safety and accessibility on the coast.

The distinctive features of this route are, an inter-oceanic connexion, having depth and width sufficient to pass the largest vessels abreast now afloat, and upon which no locks or any other obstructions of any kind will occur, and that there are good harbors at either end.

The country through which the line passes where the constructions and deepening of the river Truando have to be done, is very healthy and productive.

On the Atrato, the only unhealthy part of the route, there is no work to be done, except at the bars of the mouth, and here the climate is comparatively salubrious from the constant sea-breezes.

In making the surveys, very ample notes of the geology, botany, and sylvia, have been taken, and the sanitary condition of the country at the various locations, together with the meteorological changes, have been noted.

Mr. Serrell has estimated the cost of the work, predicated on the data furnished by Mr. Kennish, at one hundred and forty-seven millions of dollars.

Several of the most eminent engineers in the country have been consulted, and corroborate this estimate.

By the data furnished from Mr. Stone's commercial statements of the present trade of the world, it has also been estimated that the present busi-

ness between the two oceans, that would pass through this Canal, if now in use, without making allowance for any increase, would pay twelve per cent. on a cost of two hundred millions of dollars, and this to save to itself six per cent., or upwards of three hundred and eighty millions of dollars.

It has also been estimated that twenty-five thousand men will have to be constantly employed for twelve years to build the work.

This number can be maintained and sustained, as the average haul for supplies from water carriage is only twelve miles, and the location where the work is to be done, is healthy.

The Federal government of the United States proposes to verify the surveys; France and England have been asked to participate.

The necessary grants and treaties have been perfected, by which the route is secured, and a financial plan is now being digested upon which it is proposed to commence and prosecute the construction of the work vigorously.

ROCKS AND SHOALS IN THE OCEANS.

"EDITORS OF THE NAUTICAL MAGAZINE:

"Rocks and shoals in the oceans have been frequently seen, and their true positions given, but on further search could not be found.

"Now, scientific men may dream, but I am under a strong impression that they do exist; but, from some unknown causes, the ocean has its rise and fall, and they are seen at the lowest ebb only. If you will examine the records, you will, I think, find that they are seen at stated seasons, and if you will give this subject publicity, it may lead to something more decisive. "Yours, B."

"NEW-YORK, *Oct.* 19*th*, 1855."

It gives us pleasure to lay the above before our readers, and to make it the text for a few remarks. It has doubtless occurred to many, why cannot so-called discoveries of rocks, reefs, shoals, vigias, etc., in various parts of the ocean, be verified by subsequent surveys? Having become acquainted with the mode of searching for such dangers, we think the answer is plain and unmistakable. It is because they *do not exist*, at least where they were located by observers. It would be impossible for "shoals" and reefs to escape the scrutiny of the sounding lead, because of a "rise and fall" of waters, and it is extremely improbable that "rocks" exist in isolated positions, rising like steeples from the ocean's bed.

There are many appearances at sea, which, when "seen," resemble to the observer, rocks, shoals, reefs, etc., and are therefore reported to exist. But we have yet to find an instance on record, where a *bona fide* discovery has

really been made, and not only latitude and longitude obtained, but precise information respecting the object, and later navigators been unable to find it after search.

Whales, wrecks, icebergs, sea-weed, patches of colored and discolored water, tide-rips, etc., etc., have at various times been mistaken, when "seen" only, for dangers to navigation. We are well aware, that there are "throbbings of the great sea pulse," even "tremendous throes which occur in the bosom of the ocean." The immense waters which encircle, and, for two-third parts, compose the outer formation of our globe, remain in equilibrium only by *maintaining* it through an untiring, never-ending series of efforts. Notwithstanding such is the heaving, heart-beating character of the sea, as our correspondent seems to infer, yet we think the natural commotions of the ocean are not great enough, either to reveal or cover rocks, reefs, or shoals, in mid-ocean, which the searching vessels of the United States Coast Survey have failed to find, on examination with the lead and look-out. In the close vicinity of land the usual and legitimate tides appear to be the chief equilibriating phenomena. The tide-wave circumnavigates the globe each lunar day, and constitutes a "rise and fall" of waters, at regular and stated intervals. Besides the tides, LIEUT. MAURY, of Washington, informs us, that "instances of commotion in the sea at uncertain intervals—the making, as it were, of efforts, by fits and starts, to keep up to time in the performance of its manifold offices—are not unfrequent, nor are they inaptly likened to spasms. The sudden disruption of the ice, which arctic voyagers tell of; the immense bergs which occasionally appear in groups near certain latitudes; the variable character of all the currents of the sea—now fast, now slow, now running this way, then that—may be taken as so many signs of the tremendous throes which occur in the bosom of the ocean. Sometimes the sea recedes from the shore, as if to gather strength for a great rush against its barriers, as it did when it fled back to join the earthquake and overwhelm Callao, in 1746, and again Lisbon, nine years afterward. The tide-rips, in mid-ocean; the waves dashing against the shore; the ebb and flow of the tides; may be regarded, in some sense, as the throbbings of the great sea pulse.

"The emotions of the Gulf Stream, beating time for the ocean, and telling the seasons for the whales, also suggested the idea of a pulse in the sea, which may assist us in explaining some of its phenomena. At one beat, there is a rush of warm water from the equator towards the poles; at the next beat, a flow from the poles towards the equator. This sort of pulsation is heard also in the howlings of the storm and the whistling of the winds; the needle trembles unceasingly to it, and tells us of magnetic storms of great violence, which at times extend over large portions of the earth's surface; and when we come to consult the records of those exquisitely sensitive anemometers, which the science and ingenuity of the age have placed at the

service of philosophers, we find there that the pulse of the atmosphere is never still; in what appears to us the most perfect calm, the recording pens are moving to the pulses of the air.

"Now, if we may be permitted to apply to the Gulf Stream, and to the warm flows of water from the Indian Ocean, an idea suggested by the functions of the human heart in the circulation of the blood, we perceive how these pulsations of the great sea-heart may perhaps assist in giving circulation to its waters, through the immense system of aqueous veins and arteries that run between the equatorial and polar regions. The waters of the Gulf Stream moving together, in a body, through such an extent of ocean and river, may be compared to a wedge-shaped cushion, placed between a wall of waters on the right and a wall of waters on the left. If, now, we imagine the equilibrium of the sea to be disturbed by the heating or cooling of its waters to the right or left of this stream, or the freezing or thawing of them in any part; or, if we imagine the disturbance to take place by the action of any of those agencies which give rise to the motions which we have called the pulsations of the sea, we may conceive how it might be possible for them to force the wall of waters on the left to press this cushion down towards the south, and then again, for the wall on the right to press it back again to the north, as we have seen that it is.

"Now the Gulf Stream, with its head in the Straits of Florida and its tail in the midst of the ocean, is wedge-shaped; its waters cling together, and we are pushed to and fro—squeezed, if you please—by a pressure, now from the right, then from the left, so as to work the whole wedge along between the cold liquid walls which contain it. May not the velocity of this stream, therefore, be in some sort the result of this working and twisting, this peristaltic force in the sea?

"In carrying out the views suggested by the idea of pulsation in the sea, and their effects, in giving dynamical force to the circulation of its waters, attention may be called to the two lobes of polar waters that stretch up from the south into the Indian Ocean, and which are separated by a feeble flow of tropical waters. Icebergs are sometimes met with in these polar waters as high up as the parallel of the fortieth degree of latitude. Now, considering that this tropical flow in mid-ocean is not constant—that many navigators cross the path assigned to it in the plate without finding their thermometer to indicate any increase of heat in the sea—and considering, therefore, that any unusual flow of polar waters; any sudden and extensive disruption of the ice there, sufficient to cause a rush of waters thence, would have the effect of closing, for the time, this mid-ocean flow of tropical waters, we are entitled to infer that there is a sort of conflict at times going on in this ocean, between its polar and equatorial flows of water. For instance, a rush of waters takes place from the poles towards the equator: the two lobes close, cut off the equatorial flow between them, and crowd the Indian

Ocean with polar waters. They press out the over-heated waters; hence the great equatorial flow encountered by Captain Grant.

"Thus this opening between the cold-water lobes appears to hold to the chambers of the Indian Ocean, with their heated waters, the relations which the valves and the ventricles of the human heart hold to the circulation of the blood. The closing of these lobes at certain times prevents regurgitation of the warm waters, and compels them to pass through their appointed channels.

"From this point of view how many new beauties do now begin to present themselves, in the machinery of the ocean! Its great heart not only beating time to the seasons, but palpitating also to the winds and rains, to the clouds and the sunshine, to day and to night. Few persons have ever taken the trouble to compute how much the fall of a single inch of rain over an extensive region in the sea, or how much the change, even of two or three degrees of temperature, over a few thousand square miles of its surface, tends to disturb its equilibrium, and consequently to cause an aqueous palpitation that is felt from the equator to the poles. Let us illustrate, by an example: The surface of the Atlantic Ocean covers an area of about twenty-five millions of square miles; now let us take one-fifth of this area, and suppose a fall of rain, one inch deep, to take place over it. This rain would weigh three hundred and sixty thousand millions of tons; and the salt, which, as water, it held in solution in the sea, and which, when that water was taken up as vapor, was left behind to disturb equilibrium, weighed sixteen millions more of tons, or nearly twice as much as all the ships in the world could carry at a cargo each. It might fall in an hour, or it might fall in a day; but, occupy what time it might in falling, this rain is calculated to exert so much force—which is inconceivably great—in disturbing the equilibrium of the ocean. If all the water discharged by the Mississippi river during the year were taken up in one mighty measure and cast into the ocean at one effort, it would not make a greater disturbance in the equilibrium of the sea than would the fall of rain supposed. Now this is for but one-fifth of the Atlantic, and the area of the Atlantic is about one-fifth of the sea-area of the world; and the estimated fall of rain was but one inch, whereas the average for the year is sixty inches; but we will assume it, for the sea, to be no more than thirty inches. In the aggregate, and on an average, then, such a disturbance in the equilibrium of the whole ocean, as is here supposed, occurs seven hundred and fifty times a year, or at the ratio of once in twelve hours. Moreover, when it is recollected that these rains take place, now here, now there; that the vapor of which they were formed was taken up at still other places; we shall be enabled to appreciate the better the force and the effect of these pulsations in the sea.

"Between the hottest hour of the day and coldest hour of the night there is frequently a change of four degrees in the temperature of the sea. Let us,

therefore, to appreciate the throbbings of the sea-heart, which take place in consequence of the diurnal changes in its temperature, call in the sunshine, the cloud without rain, with day and night, and their heating and radiating processes. And to make the case as strong as, to be true to nature, we may, let us again select one-fifth of the Atlantic Ocean for the scene of operation. The day over it is clear, and the sun pours down his rays with their greatest intensity and raises the temperature two degrees. At night the clouds interpose and prevent radiation from this fifth, whereas the remaining four-fifths, which are supposed to have been screened by clouds, so as to cut off the heat from the sun during the day, are now looking up to the stars in a cloudless sky, and serve to lower the temperature of the surface waters, by radiation, two degrees. Here, then, is a difference of four degrees, which we will suppose extends only ten feet below the surface. The total and absolute change made in such a mass of sea water, by altering its temperature four degrees, is equivalent to a change in its volume of three hundred and ninety thousand millions of cubic feet.

"Do not the clouds, night and day, now present themselves to us in a new light? They are cogs, and ratchets, and wheels, in that grand and exquisite machinery which governs the sea, and which, amid all the jarrings of the elements, preserves in harmony the exquisite adaptations of the ocean."

The above eloquent extract is from "MAURY'S SAILING DIRECTIONS," Seventh Edition, July, 1855. To all who are curious in matters pertaining to the ocean, we would recommend the perusal of "Maury's Physical Geography of the Sea," Harper & Bros., 1855. The world has not yet produced a philosopher, who has had more ample materials for his deductions, or more talent for nautical investigations, and much light remains to be shed upon the sea and its peculiarities.

BOSTON, *Dec. 7th*, 1855.

MESSRS. GRIFFITHS & BATES:—The inevitable haste in penning, correcting and printing my article for the last number, has led to the following errors, which it may be well to correct in your next:

Page 209, read *wooden* for modern; 210, line 5, *devised* for advised; 210, line 8, *canisters* for canistery; 210, line 21, *worse* for more; 211, line 22, *cargo* for large; 210, 15th line from the bottom, put in *it*, (weakening *it* at the point, etc.;) 212, 6th line, *though* for the.

I am, very truly, yours, R. B. FORBES.

EFFICIENCY OF THE NAVY—THE WAR STEAMER NIAGARA.

From the time of its organization to the present, there has been a constant conflict between the interests of the *personnel* and the *materiel* of our Navy. One party can see nothing requisite to a good Navy but good officers; the other *knows* that without good ships and equipage no degree of efficiency in the officers will compensate. One is self-conceited and presumptive; the other respects improvement, and advances to promote it. The former does nothing without precedent, and looks upon responsibility as a hurricane; the latter takes the widest range, and any amount of responsibility based on a proper appreciation of scientific achievement; but, unfortunately, this party has always been in the minority, except when a Secretary of the Navy, coming direct from the people, has been the organ of public opinion.

It could hardly be expected that interests and feelings so dissimilar could ever meet on the same platform of compromise; nor yet, that the dominant party could long maintain the ascendancy, without the aid of a Secretary of the Navy who entertained their own views, or was indifferent to the popular will. The first active demonstration of hostility to responbility was exhibited in the Constructive Department by the Board of Navy Commissioners, at the time when the three ships-of-the-line, Delaware, North Carolina and Ohio, were about to be built at the Navy Yards Gosport, Philadelphia and Brooklyn. It was then, as now, (in the case of the six steamers,) proposed, that one should be built by a private builder; and Mr. Henry Eckford was the man named in connection with the construction of the Ohio. This proposal was resisted by the Board so long as resistance was of the least avail. The feasibility of the proposal, in connection with the moral and mechanical force of Mr. E., were a battery too formidable for the Board, and they determined to counteract that which they could no longer openly oppose; and while they seemed to withdraw their opposition, they allowed its influence to acquire sufficient power, to have borne down a man of less energy than Mr. Eckford. It was determined that no provision should be made for any change of model; and while the frames of the three vessels had been cut to the required form, size and bevellings, it was left for Mr. E. to adopt the model of the Board of Commissioners, or take the responsibility of obtaining a frame for his ship, should he produce a different model. This he was quite competent to do; and while he was required to furnish the Board with the lines of his model, which he did, he was careful to retain the alterations, which he purposely made on the floor of the mould loft, which the Department never obtained.* When it was clearly disocverable that Mr. Eckford was disposed to be guided by the proclivities of his own

* We have since been called upon to complete the only correct draft of this ship, in the hands of a private builder.

genius, without reference to the Board, the invective gall of prejudice was discoverable oozing out in every direction, and simultaneous with the report, that the ship was a failure, was another announcement made, that she never should go to sea while the Board had influence—a pledge kept for twenty years, until long after Mr. Eckford had placed his reputation beyond the reach of the enemies of progressive science, by building vessels-of-war for other governments. The ship finally proved herself to be not only worthy of her constructor, but one of the best, and is regarded, by those quite competent to determine, as the best vessel of her class in the Navy. The sparks of constructive reform were thus quenched, inasmuch as the charge of *failure* could never be satisfactorily removed without a trial of the ship, and the friends of progress were, as a consequence, hushed into silence. The frequent changes made in the Board by the detachment of junior members, removed, in a great measure, the weight of responsibility from the Board; while a change in the Cabinet often brought a new functionary at the head of the Department, which was a sufficient pretext for cancelling all obligations on former account; and full allowance and fair weather were both the *mess* and *watchwords* for future operations. Vast sums of money were expended upon contracts, the result of their own suggestions, in live oak frames of vessels of all classes, chiefly of the largest size, adapted to models which no man would dare own who valued his reputation; large quantities of yellow pine were also made to bear the imprint of the *woodman's axe*, in providing masts and spars for those vessels. A large portion of these frames have since been crowded out of sight into other service than that for which intended: so also with the yellow pine; and still there are hundreds of thousands, if not millions, of dollars worth of this spoiled timber in the different Navy Yards. With the continuation of this irresponsible power, the number of hulks and heterogeneous forms increased in the Navy until the brigs *Pioneer* and *Consort*, intended for the Exploring Expedition, had created a meal of *mirth* for every mess and nautical observant, both in and out of the Navy; until the pressure from without became so great, that Congress found it necessary to legislate—to save the Navy from disgrace. The Board of Commissioners was abolished, and the Bureau system adopted in its stead. Under this arrangement, the whole routine of naval operations was divided into Departments or Bureaus, each having cognizance of a particular part of the service; the number of Bureaus being five—with the Hon. Secretary of the Navy at the head of all the departments. Of all the Bureaus, that of Construction, Equipment and Repairs, is the most important, inasmuch as it gives shape or form to our vessels-of-war; and, by the law of Congress, must have a skillful Naval Constructor for its chief. The friends of progress, in the Navy, encouraged by this new state of things, began to hope for a brighter era for the right arm of national defence in the Constructive Department; but this hope was short-

lived, if we may judge of their surprise, at witnessing, instead of a skillful Naval Constructor at the head of the Bureau, a Commodore occupying the place. But even this was better than it had been; for now the several Naval Constructors were allowed to model the new sloops-of-war they were instructed to build. What a condescension! These new vessels gave the reformers new vigor: they exhibited a decided improvement; and although the constructors were not allowed to complete their vessels according to their own plans, yet there had been glory enough gained in this effort to justify another attempt to improve; and it was strongly recommended, that private builders should be allowed to model and build some of our vessels-of-war, in order that the Navy might profit by the superior models of merchant vessels. This was a fine opportunity to *crush the spirit of innovation*, and its advantages were at once improved by the Bureau: the contract system was entered into, for small vessels, with an amount of laxity which placed a good vessel beyond the reach of the Department, either in model, material or mechanism; political influence of the highest grade, and capacity of the lowest, being so often inseparab y connected. These vessels being sent speedily into a warmer climate than that in which the timber was cut, of which they were built, (in connection with the want of ventilation, of which there is much reason to complain,) were soon rotten, and, together with the contract system, were condemned. Again, the progressive minds in the Navy rallied under the banner of reform, and the office of Chief of the Bureau was vacated, and instead of a Commodore, a Naval Constructor, whose antiquarian models show him to be anti-progressive, was appointed. Within the orbit of this Department lies the responsibility of furnishing engines for steamers, with a practical engineer at its head; and, as if it were a more responsible position to give proportion to the engine than to give shape to the vessel, *a Consulting Engineer* has also been appointed, from among the ranks of the most practical men of the age; while the Constructive Department is deemed less *important*, and is left to all the consequences of presumptive imbecility. The reform movement in the Navy had found sympathizers without: there seemed to be a demand, that while steam was working wonders in the merchant marine, it was equally applicable to the wants of the Navy; and that while the list of efficient vessels in the Navy was being annually reduced, no effort was being made to maintain its efficiency, much less to increase its force, or to keep pace with the unparalleled growth of our commerce. Coeval with the demand for an increase in the efficiency of the Navy proper, was that of the demand for a retired list for its officers; and again it was found necessary for Congress to legislate, in order to maintain its dignity; and when the present Secretary announced his proclivities for reform, his suggestions met with a hearty response.

The design of the late act of Congress was instigated by an equal necessity of reform for both the *personnel* and the *materiel* of the Navy. But the

same selfish grasp for place and power is still manifested now, as in days of yore, and the model of the bill, like the models of the vessel, show manifest signs of ignorance and imbecility.

The results of the efficiency act, as regards the *personnel*, are in the hands of Congress. We have already discussed this subject at some length, but as almost daily new questions arise in the minds of persons who are just awakening to the necessities of *beneficial* reform, we are constrained to make free use of both our retrospective and present knowledge of this thing in all its length and breadth. In its conception, it was first intended to apply to the *whole* Navy; that, as there were Surgeons and Pursers too old, and some otherwise inefficient for the whole of their duty both ashore and afloat, there should be an equal provision made for the Passed Assistant Surgeons and young Pursers who did the duty without the pay of those who numerically filled the complement of their respective grades. The watch officers refused to admit the Surgeons and Pursers in the draft for the efficiency act, and these corps were too small to command the necessary influence to be included when opposed by nearly four times their number. They were therefore excluded, and since the law has taken effect, the policy of their rejection is fully apparent. By general orders from the Department, 1846–7, Surgeons and Pursers of more than twelve years' standing rank with Commanders; those of less than twelve years, with Lieutenants; Passed Assistant Surgeons next after Lieutenants, and Assistant Surgeons, not passed, next after Masters. The result of the efficiency act to these officers is, that Passed Assistant Surgeons, who entered the Navy at from twenty-one to twenty-five years of age, and served as Assistant and Passed Assistant for fifteen years, or until they are from thirty-five to forty years old, are now ranked by the young Lieutenant who entered the Navy six years ago at the age of fifteen. And Pursers, who, when they enter the service, are about as old as the Passed Assistant Surgeons, are in the same category.

The Marine corps is also placed far in the back ground by the same act. Their rank being with the officers of the Army, who, by the way, have lost rank in the same ratio in their assimilation with the Navy, as follows:

Brigadier-General as a Commodore.

Colonel as a Captain of a ship of 40 guns and upwards.

Lieutenant-Colonel as a Captain of a ship of 20 to 40 guns.

Major as a Captain of a ship of 10 to 20 guns.

Captain as a Lieutenant in the Navy.

Naval Lieutenants ranking all Lieutenants in the Marine corps. The consequence is, that Marine officers, who entered as Second Lieutenants at about the same age as Assistant Surgeons, are some of them now twenty years in the service, and ranked by their messmates of half their age and one-fourth the amount of service.

Whether Congress will amend the efficiency act, or pass some additional

one so as to restore the relative position of these different grades of officers, or, what would be better than their now position, abolish their rank altogether, is a question which free discussion is likely to develop.

In the *materiel*, the provision for six auxiliary steamers, there is one prominent exception. Congress determined that one of these ships should be constructed by a private builder, and Mr. George Steers was entrusted with her construction; while the other five were left in the hands of the Bureau of Construction, perhaps that their models might indicate their origin. In conformity with the usages of the Department, names were given to the several vessels after the rivers of our country, and the one to be built by Mr. Steers at the Brooklyn Navy Yard was called the NIAGARA. This vessel was commenced in 1854, and is now about ready, and will be launched as soon as the water in the launching slip shall have been sufficiently deepened. It was but reasonable to suppose that every facility would be afforded Mr. Steers, now that improvement seemed to be really intended, and with the exception of the propulsory power in the quality of the canvas, the ground tackle in the kind of anchors, and the ventilation in the improved side lights he has thought proper to use, he has been allowed to exercise his own judgment, both in the model and manner of construction, and is like the constructor of the Ohio, quite willing to take the whole measure of responsibility, having a full knowledge of its weight and bulk. This vessel, as her dimensions and calculations will show, is the largest of the six, and is also a *much better model for the purposes intended*, while her manner of construction furnishes a much better distribution of materials; with better accommodations, she is the best piece of Nautical mechanism ever exhibited either in this or any other country; and we do hope that inasmuch as Congress appointed her constructor, they will see by special act (if necessary) that she has a speedy trial, and not, like the Ohio, be kept 20 years under the blighting influence of that evil report, that she " is a failure," which was set afloat in Washington soon after the Chief of the Bureau paid her a visit. We would suggest that Mr. Steers be permitted to manage the Niagara on her trial trip, inasmuch as he is quite competent to do so, and that she sail in company with one or more of the five built at the other Navy Yards.

In the construction of the Niagara there are principles involved, which are of great importance to the safety of vessels, which have never been appreciated in the Navy, either in this country or elsewhere; hence the difficulty in brooking so great an innovation. It was supposed that in the model and internal arrangements alone, would this vessel differ from the other fine vessels; but when it is discoverable that, not only is the form of the fabric and her arrangements in armament different, but that the manner of distributing the materials throughout the vessel is also entirely different—utility being regarded as of more consequence than the time-honored precedents of the

Navy—the constructor has sought to secure the greatest amount of strength with the least bulk, and has admirably succeeded; aside from the model, we deem it proper to rebuke our friends of the Navy who so strenuously advocate the through passage of all the fastenings of the vessel. It requires but a moment's reflection to discover that when the frame of a vessel is of sufficient size to secure the planking and ceiling too, that it must, with the plank added, furnish equal security for the knees; but if this were a mooted question, it is fully set at rest in the experience obtained from private merchant vessels; if the bolting, extending through the frame only, and all the bolts taking different directions, is sufficient to hold the knees until they break off in the throat and its vicinity, is it not quite clear and conclusive that the length of the bolts were quite commensurate with the strength of the knee, and that if the bolts had extended quite through the vessel, we should not, only have wasted the material, but we maintain that we would have diminished, rather than have increased the strength. And we will go farther, and say, that there is not a knee in the five new steamers but that has not from twenty to fifty per cent. more of fastening than is sufficient to break the knee in its strongest part. But again, this through principle of bolting the knees, brings in copper-fastening for the deck-frame below water, which should at once settle the question; no ship owner, having any considerable amount of experience, would allow his ship to have her lower-deck fastenings of copper, even if the builder would furnish them at the same cost. A ship, like an engine, is properly proportioned, when all the parts break at the same instant. Now experience teaches us that the deck-frame fastenings are among the strongest parts of the ship, but that the knees, themselves, often break near the throat without starting the fastening; we have particularized at this point, because we know that this is the point on which the prejudice of precedent will rally her greatest forces against the Niagara. We remember on several occasions in repairing vessels, to have extended all the fastenings quite through the ceiling from the outside, but it was because the frame was too rotten to hold; and we say, that if the frame is of any service, it is to hold the plank and deck-frames to their place; if it will not do that, we had better be without it, and build the vessel of heavy plank in a series of thicknesses. The opinion has gained a firm footing in the Navy (and we would that it were only there to be found) that the strength of materials is in proportion to the mass. Nothing can be more absurd. The Niagara has, like the other five ships, a live oak frame, with this difference—she is filled in with yellow pine, her bottom is also of yellow pine, her frame is plated on the outside instead of the inside, as the others. We need not add a single line as to the increased strength of outside plating—the unfortunate war-steamer *Roanoke* will fully prove this; as to the model, she has sharper ends, with less dead-rise; and we have only to say, that it would be well for every Naval Constructor to pay her a visit, and if they will but leave their prejudices at

home, they will be constrained to admit that, although the shape of the fabric is not such as they would adopt, yet the mechanical construction excels anything they ever saw.

DIMENSIONS AND CALCULATIONS OF THE NIAGARA.

		Feet.	Inches.
Extreme length from taffrail to the eagle's beak		345	
Do. do. on load line		328	10½
Moulded breadth		53	8
Extreme do.		55	
Depth of hold		31	3
Draft of water at load-line		23	
Ratio of length to breadth on load-line	5.979		
Height of port-sill above load-line		14	10
Distance of dead flat abaft middle of length on load-line		7	3
Centre of bouyancy abaft middle of length on load-line		8	7¾
Centre of gravity of displacement below load-line		8	
Moulded displacement at 23 feet draft	5,110 tons		
Total do. " " "	5,440 "		
Area of load-water-line	12,755 sq. feet		
Meta centre above load-line		5	6
Movements of stability $(S \frac{2}{3} y^3 \ d\ x)$	2415560		
Weight of hull	2,750 tons		
Do. " iron bolts in hull	400,000 lbs.		
" " galvanized iron and spikes,	130,000 "		
" " copper bolts	25,000 "		
" " composition bolts	16,000 "		
" " diagonal iron braces	169,000 "		
Armament, 12 eleven-inch pivot-guns—probable weight of each,	2,700 "		

Dimensions of the Wabash, built at Philadelphia, the Merrimack at Boston, the Minnesota at Washington, the Colorado and Roanoke at Gosport, are all built by the same model, but differ somewhat in length, with a slight alteration in the form of one of them ; but with the same displacement, the Merrimack is 5 feet 8 inches shorter than the Wabash—this increased length of the Wabash is the result of adding two frames amidships.

DIMENSIONS OF THE WABASH.

	Feet.	Inches.
Length between the perpendiculars	262	7
Beam moulded	50	2
Do. extreme	51	4
Length over all	301	6⅝
Depth of hold	26	2
Length from knight-head to taffrail	284	0⅝
Length of tread of keel	259	0⅝

CONSTRUCTION AND FINISH OF THE SHIP LIGHTNING.

Reference may be had to page 188, for the draught, calculations, and a few remarks concerning this ship. We now give additional particulars, with her spar draft.

Her keel is of white oak, sided 15, moulded 30 inches. Its scarfs are 12 feet long, bolted with copper, and its parts were also bolted together before the frames were raised. The floor timbers are sided from 12 to 14 inches, and moulded 19; and the frames are chocked with oak above and below every joint, and bolted together fore and aft. She has three tiers of midship keelsons, each tier 15 inches square, and double sister keelsons of the same size on each side, one above the other. The whole of these keelsons are bolted through the timbers and keel with inch-and-a-quarter copper and iron, the bolts within a foot of one another. The sister keelsons are also bolted horizontally through the midship keelsons and each other. All the keelsons are scarphed and keyed, and fitted close together. Her frame, all the knees in the hold, and her hooks and pointers are of white oak, and her planking is of hard pine. The whole of her ceiling is of hard pine, and that on the floor is 5 inches thick. Over the first futtocks there are two bilge keelsons, each 15 inches square, placed alongside of each other, and these, like the other keelsons, are scarphed and keyed. They are square, fastened through the timbers, the bolts having been driven alternately from both sides and riveted, and they are also bolted together edgeways. The ceiling above the bilge keelsons up to the lower deck, is all 9 by 12 inches, all bolted together edgeways every three feet, and square fastened through the timbers. The lower deck beams are 14 by 16 inches midships, tapered an inch or two towards the ends, and the knees connected with them are of white oak. The hanging knees are sided from 10 to 12 inches, have 5½ feet bodies, 4 feet arms, are moulded about 22 inches in the angles, and have 20 bolts and 4 spikes in each. Their lower ends rest upon a lap-strake or stringer of 6 inches thick by 12 inches wide, which is bolted through the ceiling and the timbers. This strake forward and aft is beamed and kneed in the angles of the ends, and forms a strong horizontal hook. The lodging knees are sided 8 inches, are scarphed together in every berth, and closely bolted. The stanchions are very stout, are clasped with iron, and are kneed to the beams above, and to the keelsons below. There are 4 massive pointers of oak forward, ranging from 20 to 50 feet in length, and two of these are filled in the angles with hooks, and the others are fayed to the keelsons below and to the beams above. They are 12 inches square, and are bolted from both sides, through the cants and timbers. Her ends are as strongly secured as those of a Davis Straits whaler. The run is secured in the same massive style as the bow.

Her between deck waterways are of hard pine 15 inches square, with a strake of 9 by 12 inches inside of them, jogged over the beams and bolted through them, and another strake of 12 by 14 inches over them. These extend her whole length, are bolted vertically through the beams, and horizontally through the timbers. The ceiling above is 5 inches thick, and the clamp under the upper deck beams is 9 by 14 inches, and, like the other ceiling, it is square fastened. The upper deck beams are 9 by 14 inches, and the knees connected with them are of hackmatack, about the same size as those below, and are fastened in the same style. The stanchions under them are of oak turned, and have bolts through their centres, which are keyed on the upper deck beams and set up with nuts and screws to the beams below, thus binding both decks together. The planking of the lower deck is of hard pine, 3½ inches thick, and the upper deck is white pine of the same substance. In every berth, between the hanging knees, she is diagonally cross-braced with hard pine of 9 by 7 inches over the ceiling, and these braces are bolted through the ceiling and the timbers. Her hooks forward and aft between decks are beamed and kneed in the same style as those below. She has 32 beams under the upper deck, and 30 under the lower deck, with a corresponding number of carlines. All the mast-partners and hatchways are strongly kneed in every angle.

The upper deck waterways are 12 by 14 inches, with a thick strake inside of them, chamfered off towards the deck; and her bulwarks, like those of a ship of war, are built solid inside and outside. The bulwarks are 5 feet high, surmounted by a monkey rail of 2 feet, which is panelled on the inside.

Her garboards are 8 by 12 inches, the second strake 7 by 12, the third 6 by 12, chamfered off to 4½ inches thick, the substance of the planking on the bottom. The wales

are 5½ by 8 inches, and she is planked flush to the planksheer moulding. Outside as well as inside she is square-fastened, and is butt and bilge bolted with copper.

The mouldings of the planksheer and rail are relieved with raised strakes above and below them, which are also moulded on the edges; and outside she is polished smooth as marble, and every line and moulding is graduated in exact proportions, fore and aft.

The whole height of her bulwarks is 7 feet, and she has a full topgallant forecastle, which extends to the fore-rigging; and its deck is connected with the top of a house, which is continued aft, and is 48 feet long, and 19 wide at the after-end. The top of this house is connected with the poop by two gangways, so that the men can pass forward and aft without descending into the waist. She has a full poop-deck 90 feet long, the outline of which is protected by a mahogany rail, on turned stanchions of the same wood.

There is a spacious house over the wheel, designed, in part, for a smoking-room; and it also protects a staircase on the starboard side, which leads to the captain's state-room and the after-cabin.

The after-cabin is 34 feet long, 12 wide, and 7 high, and is wainscoted with mahogany, enamel, polished ash, and other fancy woods, relieved with rosewood pillars, paper-maché cornices, and flowered gilding. It has 4 state-rooms, 2 sofa-recesses and other apartments, a splendid sofa aft, rich carpeting, a circular marble table in each recess, and a mahogany extension table amidships. All the state-rooms are furnished differently, for the sake of variety, we suppose, and their furniture is of the choicest kind, arranged with consummate skill. Every state-room has a square window in the side, and a perforated ventilator between the beams; so that, for light and air, all has been done that could be desired. There are 4 stern windows, and a large, oblong-square skylight in the after-cabin, and similar skylights over the dining-saloon, which is connected with the after-cabin. The skylights are set in mahogany frames, and nearly all the windows are of stained glass. In the recesses and partition of the after-cabin there are plate-glass mirrors, which give reflected views of every part of the cabin. A more beautiful cabin, or one more richly furnished, is seldom seen.

The dining-saloon, which leads from the cabin, is also wainscoted—is painted pure white, like enamel, and is tastefully relieved with gilded mouldings and flower-work. It is 48 feet long, 13 feet wide aft, and 14 forward, and has a large mahogany table its whole length, with settees along its sides. It has spacious state-rooms and other apartments on each side its whole length, and these rooms are admirably designed for the accommodation of families. In richness of furniture, light, and ventilation, they are equal to those of the after-cabin. At the forward partition there is a costly side-board of marble, and rising from it is a large mirror. Another mirror and sofa ornament the after part, so that the saloon is reflected from both ends.

The chief-officer's state-room is on the starboard side forward, and the pantry opposite; and between them are two doors, which lead to the quarter-deck. The front of the poop-deck projects about five feet, and shelters the entrances to the saloon.

The accommodations for her second-cabin passengers are in the house before the main hatchway, which has an entrance amidships, aft. It is 36 ft. long, and has a passage amidships 5 feet wide, which leads to six state-rooms on each side; and these rooms are well lighted and ventilated, and tastefully furnished. The forward part of this house contains the galley, and before it, on each side, are staircases which lead to the between-decks. Her crew's accommodations are under the topgallant forecastle, and are neatly fitted up.

The between-decks are designed for the accommodation of passengers, and have 10 plate-glass air-ports on each side, skylights and ventilators along the sides of the house above; so that they are well supplied with light and ventilation, and will be fitted up in superior style when the ship arrives in Liverpool.

As the top of the house projects three feet on each side, a waterproof awning will be spread from it to the rails, so as to shelter the waist, that the passengers may always have an opportunity of coming on deck without exposure to wet weather.

Her accommodations forward and aft are upon a liberal scale, and are most admirably designed for health, comfort, and safety.

The ship herself is amply found in the best of ground tackle, has a good, substantial windlass, three capstans, a patent steering apparatus, and copper-chambered pumps; and below she has an iron water-tank of 5,000 gallons capacity.

This magnificent ship is owned by Messrs. James Baines & Co., of Liverpool, designed for their line of Liverpool and Australian packets, and is commanded by Captain James N. Forbes, who superintended her outfits. Captain Forbes is well known as the former

commander of the famous ship Marco Polo, built in St. John's, New Brunswick, in which he made two successive voyages from Liverpool to Australia, in less than twelve months, including detention in port. Her builder, Donald McKay, has a world-wide reputation. His ships, for beauty, strength and speed, have no superiors on this side of the Atlantic; and as the Lightning is the first ship ever built in the United States, for an English house, he has done his best to make her perfect in every detail.

She is the largest ship belonging to Liverpool, and has proved herself one of the fleetest sailers ever built on either side of the Atlantic.

VOYAGE OF THE CLIPPER SHIP "LIGHTNING" FROM ENGLAND TO AUSTRALIA AND BACK.

Having furnished the draught and particulars of this Boston built ship, it is only fair to place on record some of her remarkable performances, an account of which we quote as follows from a Liverpool commercial paper:

Extraordinary run of the "Lightning."

Liverpool, *Oct.* 23, 1855.

A few days ago we recorded the extraordinary run of the clipper ship Red Jacket, Reed, commander, belonging to the White Star line of Australia packets, which made the passage hence to Melbourne in 69½ days, and homeward in 73½ days. We have now the pleasure of chronicling the still more extraordinary performance of the rival clipper Lightning, Forbes (late of the Marco Polo) commander, belonging to the Black Ball line. This vessel, on her recent passage to Melbourne, was delayed by light and head winds, and, consequently, made a comparatively long run of nearly 78 days; but, on the passage home, Captain Forbes has shown what the Lightning is capable of doing under moderately favorable circumstances, by making the run in the unparalleled short space of 63 days—thus regaining the supremacy which had been snatched from him by Captain Reed.

The Lightning has brought upwards of 80 passengers and 40,000 ounces of gold, besides a large amount in the hands of passengers. She also brings answers to letters taken out by the Great Britain, making the course of post 132 days.

The Lightning sailed hence on the 14th day of May, and has made the voyage out and home, including the detention of 20 clear days at her anchors in Hobson's Bay, in 5 months 8 days and 21 hours, mean time, from passing the Rock Light till she was back in the river again; thus performing the voyage in upwards of three days less time than the Red Jacket, notwithstanding that she was at anchor in Hobson's Bay for a period of five days more than that vessel.

The Lightning anchored opposite Sandridge, three miles from Melbourne, on the afternoon of the 31st of July, and her mails were delivered, after she had anchored at the Post-office, Melbourne, at half-past five o'clock in the afternoon of that day.

The time occupied by the Lightning in making the round voyage to Australia and back, considering her detention in port, is unprecedentedly short, notwithstanding that the outward voyage, from the nature of the winds experienced, occupied longer than might have reasonably been expected from the well-known qualifications of the ship and the ability of her commander. Her run from the Mersey to the Equator occupied 25 days, and from the parallel of the Cape to Port Phillip Heads 30 days; indeed, such was the nature of the winds, that the topgallantsails never had occasion to be furled during the entire passage, neither was there occasion to reef the topsails. With the exception of five days, when the ship logged 332, 348, 300, 311, and 329 knots respectively per day, no extraordinary distances were logged. Cape Otway Light was made on the night of the 29th of July, Port Phillip Heads on the 30th, and she cast anchor, as above stated, in Hobson's Bay, on the 31st, her run having occupied 77½ days, mean time.

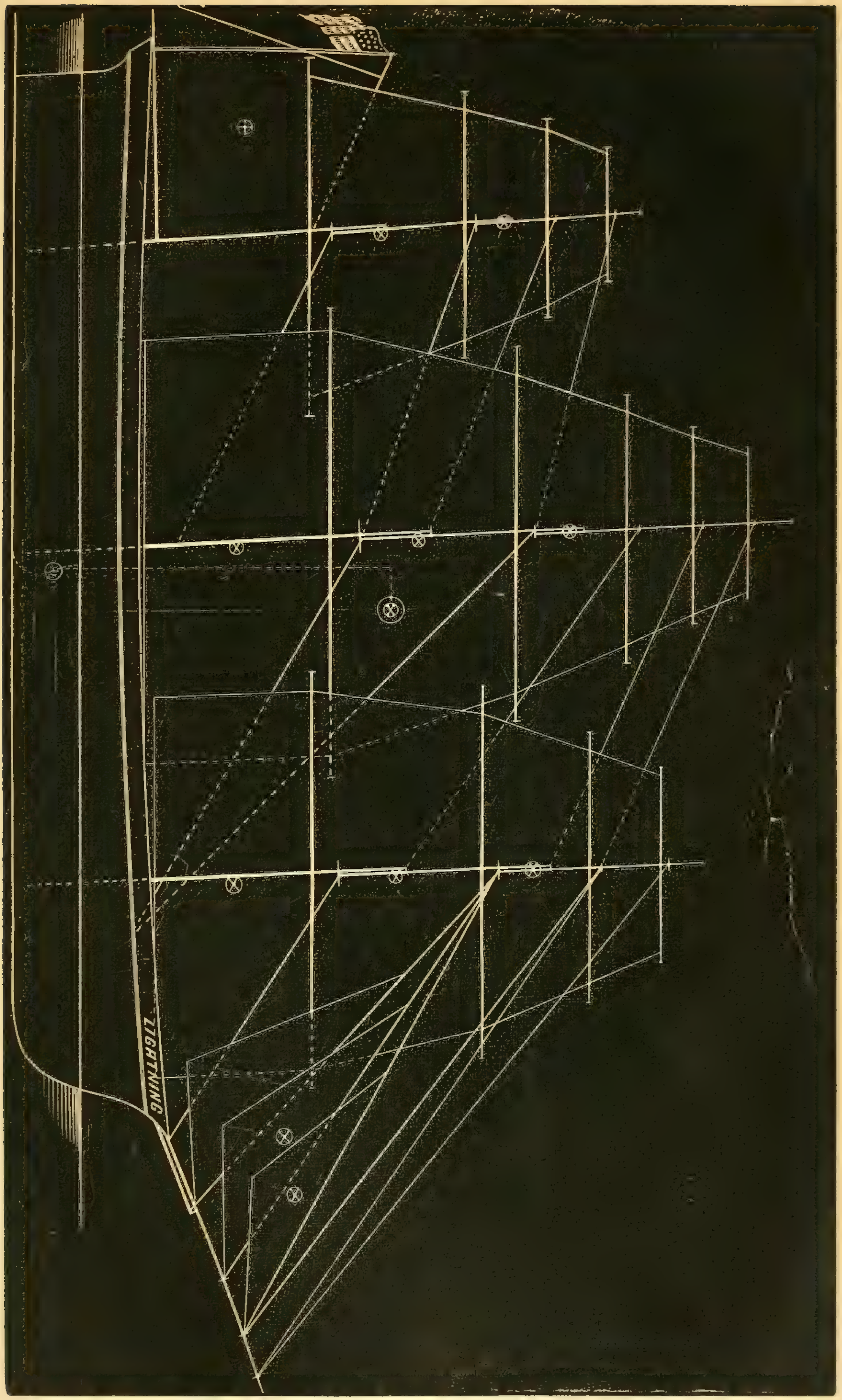
On the 20th of August, the mails and passengers being embarked, and everything ready for sea, the anchor was hove up, and the Lightning was taken in tow by the steamer Washington as far as the Heads, which she passed at 4 P.M., a smart north-west breeze blowing at the time, and by noon of the 21st, 268 miles were logged, Swan Island Light, Banks' Straits, having been passed at 11 A.M. On the 24th, at 4 A.M., she passed a large ship supposed to be the Mermaid, which sailed two days previously for Liverpool; and at 10 P.M. same day, passed the Auckland Islands. Thence to the 28th, when the ship was in lat. 57.20 S., long. 164 W., fresh westerly and south-westerly breezes were experienced,

and the ship went nobly along, seldom logging less than 14, and frequently 18½ and 19 knots an hour.

At 11 P.M. on the 28th, while under a heavy press of canvas, a violent squall from the south-west caught the ship, and carried away the foretopmast studdingsail-boom, the foretop, foretopgallant, and foreroyal yards, and blowing all the sails to pieces, and the ship was obliged to go under easy canvas for the succeeding four days until the yards and sails had been replaced. From the first to the 8th of September fine westerly winds were experienced, and the ship averaged close upon 300 miles per day, as per log. On the 8th, at 3 A.M., Cape Horn bore north-west, distant 50 miles, being a run of only 19 days mean time from Port Phillip Heads, by far the fastest ever recorded either under canvas or steam. On the 10th, 11th, and 12th, north-east, east, and south-east winds were experienced, and but moderate distances were logged, the ship having to be frequently tacked to make a fair-way course. On the 13th and 14th, strong and south-west winds were experienced, and she ran 351 and 354 miles per day respectively. From the 15th to the 20th light and head winds were met with, and only from six to seven knots per hour were averaged. On the 20th she was in lat. 29.13 S., long. 31.40 W., and thence to Pernambuco, which port was passed at a distance of six miles, on the morning of the 28th, nothing but light north-east and north-north-east winds were experienced.

The Equator was crossed at 9 A.M. on the 30th, in long. 34.30 W., the ship at the time being only out a little over 40 days mean time from Port Phillip—an extraordinary achievement, considering the adverse winds encountered after rounding Cape Horn. For the first five days after crossing the Equator light winds and calms were met with, accompanied by heavy torrents of rain, and the ship made little or no progress. On the 5th, in lat. 10 N., long. 34 W., gentle north-east trade winds were experienced, which continued until the 10th, in lat. 30 N., long. 37 W. On the 11th and 12th she had moderate south-east winds, and at noon of the latter day was in the latitude of St. Michael's and long. 30 W., being only 4 months and 29 days out from the time of leaving Liverpool. From the 12th to the 19th the winds were east-north-east and north-east, very light, and during the intervening seven days the ship reached lat. 46.15 N., long. 28 W., and at 10 P.M. on the 19th a strong northerly breeze sprang up, which continued until her arrival off the Old Head of Kinsale, at 4 A.M., yesterday. At 10 A.M., off Mine Head, signals were exchanged with the Royal Mail steamship Arabia, hence for New-York; at 3.30 P.M. Tuskar Light was passed; at 8.30 P.M. Holyhead Light was passed; and at 10.30 P.M. the ship was abreast Point Lynas, where she received a pilot. The ship was kept under easy sail during the night, waiting a sufficiency of water to cross the bar, and arrived in the river 9.30 this morning.

Notwithstanding the performance of this vessel, there existed in the minds of the nautical fraternity a positive denial of the principles of construction developed in her model; and while it had been made quite manifest to her constructor that even a better distribution of the propulsory power might have been made, it was quite sufficient for the English builders to know this, when they had a pretext for endeavoring to cripple the original design, and succeeded in persuading the owners to fill out those hollow lines on the bows, so much at variance with their notions of propriety: accordingly the bow was filled out until a convex line was obtained, and this was done in a manner which is not mechanical, the fillings being of soft pine, and the connection being such as to leave the vessel leaky; and now, before the vessel had established a reputation, the English mechanics were quite willing to attribute any subsequent performance worthy of note to their modification of the fineness of her lines on the anterior part, which is but an incubus at best, as the spar draft, in connection with the lines, will prove, and abundantly pay for the investigation, and show the centre of propulsion to be too far forward of the centre of buoyancy.


LIGHTNING

CLYDE AND BOMBAY LINE OF PACKETS: THE "KATE CAIRNEY."*

Dimensions (United States' Act).	*ft.*	*inches.*
Length from fore part of stem to after part of stern-post aloft	152	3
Breadth of beam	28	6
Depth of hold	19	0
	Tons.	
Register	$775\frac{51}{95}$	
British Old or Builders' Measurement.	*ft.*	*inches.*
Length of keel and fore-rake	150	3
Breadth of beam	28	6
	Tons.	
Register	$582\frac{27}{94}$	
Customs' New Measurement (Act 1836).	*ft.*	*tenths.*
Length on deck	184	4
Breadth at two-fifths of midship depth	26	0
Depth of hold at ditto	19	0
Length of quarter-deck	37	9
Breadth of ditto, mean	21	1
Depth of ditto, do.	2	9
Tonnage.	*Tons.*	
Hull	$573\frac{69}{100}$	
Quarter-deck	$25\frac{9}{100}$	
Total register	$598\frac{78}{100}$	
Tonnage per Customs' Act, May, 1855.	*Tons.*	
Hull	$520\frac{63}{100}$	
Quarter-deck	$28\frac{41}{100}$	
Total real register	$549\frac{4}{10}$	

Customs' Act for Foreign Vessels.

Tonnage.	*Tons.*
Hull	$563\frac{90}{100}$
Quarter-deck	$25\frac{9}{100}$
Total register	$588\frac{99}{100}$

—Showing a difference of 40 tons less by the Act which came into operation in May, over the old or builders' measurement.

These five different measurements are given, in the hope that they may be interesting to the ship-owner, ship-builder, and shipping interest generally. This vessel is a beautiful model, and will carry about 250 tons dead weight above the register tonnage; has got accommodation for a limited number of cabin-passengers, &c. Launched March 24th. Classed 13 years A 1.

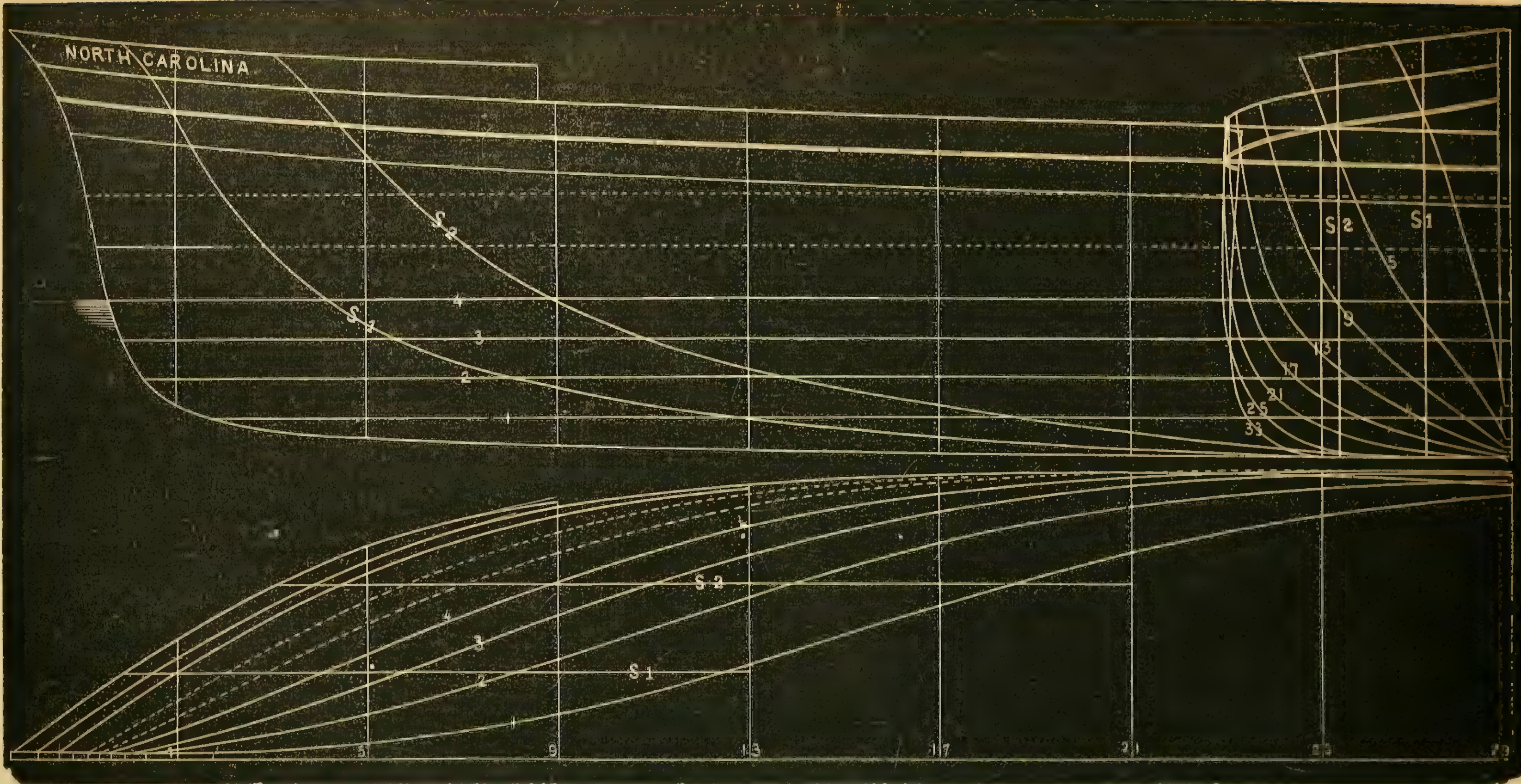
* Built by Messrs. Robert Steele & Co., shipbuilders, Greenock, 1855.

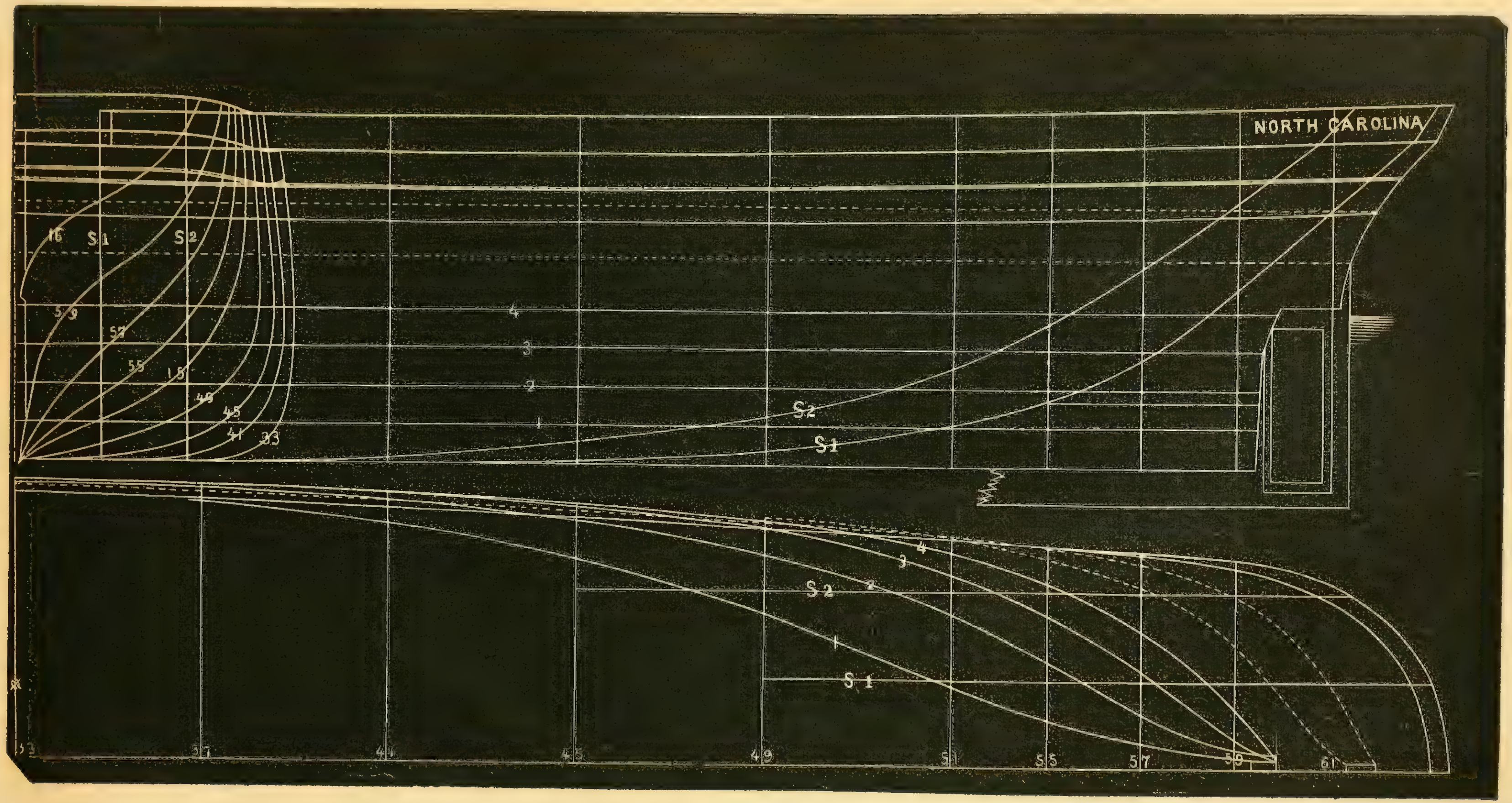
Description.—A demi-female figure-head; no galleries; square-sterned and carvil-built vessel of timber; standing bow-sprit; three masts; ship-rigged. Owners, Charles Cairnie, junior, Esq., and the Commander.

Port of Glasgow. Commander, Mr. Alexander Rodger.—*London Artizan.*

THE SCREW STEAMER NORTH CAROLINA.

The particulars of this vessel, with an account of her performance, and subsequent loss by collision, have been already published, the former in vol. 1, page 337, the latter on page 337, vol. 2, of the Nautical Magazine. The accompanying lines will serve to show how little is known of the proper shape for screw propellers. Here is a vessel having the largest displacement that ever crossed the ocean by steam, within the same dimensions, averaging 8½ knots in a winter passage across the Atlantic. Her displacement, at 11 feet draught above base line when she left port was 1,195 tons, which was propelled with a 3-bladed screw 2 feet 9 inches long, 9 feet 3 inches in diameter, and 12 tons of coal per day; had her screw been 11 feet in diameter she would have done much better, although this is the best performance ever yet made, displacement tonnage and power of screw considered. These lines, it will be observed, are, by the casual observer, considered full aft, because he measures the one end of the vessel by the other; but if he had never seen the forward lines, and had been told that she was intended for a freighting vessel with a good degree of speed, he would not have thought that the stern was too full; but as soon as he looks at the bow, he cries out, too full aft. We would in all candor ask our friends, the ship builders, why we should not let the best end of the model go foremost? If the vessel will perform best with the small end foremost, why not let it go so; what have our prejudices to do with the laws of nature? The time has been within the last 20 years that we ourselves would as soon have thought of placing the bowsprit in the stern of a vessel, as to have entertained the idea of building a vessel with the bulkiest part aft. Not only in this vessel, but in the steamer Ocean Bird, (which is the fastest vessel afloat,) is this same principle developed. The Niagara partakes in a good degree of the same principle in her model. Now we say, that if the model of the North Carolina screw steamer be right for burthen as well as speed, (as she proved herself,) and the Ocean Bird and Niagara, wherein the same general principles of shape are developed, are also right for improved speed, and the *five new war steamers* are also right, with the bulkiest part forward; then we say, that the world has nothing to fear, *no one can go wrong.*


NORTH CAROLINA


NORTH CAROLINA
S 1
S 2
1
2
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LAUNCH OF THE U. S. AUXILIARY STEAMER ROANOKE.

THE launch of this vessel, one of the six authorized by Congress, took place at the Gosport Navy-Yard, Dec. 13th, 1855, and, in its results, is the most memorable on record, and furnishes us the most unexceptionable testimony of the flexibility of our ships. The vessel was prepared for launching in the usual manner, with perhaps no change in the launching slip since the launch of the frigate St. Lawrence, which should have been deepened, either by its extension, or by a greater inclination of the launching-ways, either of which would have placed the vessel in her destined element without any noticeable change of form, even to her flexible bottom. The launching-ways of a vessel should always be so elevated at the bow, or depressed at the stern, as to transmit immediately (without an interval of time between), the weight of the protruding and overhanging end into the water, sufficiently deep to raise the end by its buoyancy alone, without reference to any other means. Whenever this is not the case, the vessel is injured in her weakest part, which is at the middle of her length; and not a few are thus strained in launching.

It is the custom in the Navy to mix Castile-soap with tallow for coating the ways, which increases the probabilities of the vessel's starting immediately on being released from her position of confinement on the stocks; and, having once began to move, the momentum overcomes almost every obstacle which may interpose; another of the customs of the service is, to raise the ship by a course of wedges, driven by a battering-ram, which are inserted between the packing and the bilge-way. It is the general practice to relieve the keel-blocks of at least half of their burden; in this case they were very nearly, if not entirely, relieved. This is wrong; inasmuch as it hogs, or deforms the vessel while in her cradle on the stocks, by raising the midship body more than the ends. The manner in which this is accomplished is as follows: the packing midships, where the vessel has the least dead-rise, is driven quite as hard as that on the end where the poppets lift at a disadvantage, and consequently yield to their burden more readily, when, by the more direct lifting angle of the wedges under the midship body, there is little or no yield; consequently, the middle is raised off the keel-blocks while the ends are only partially raised, and the blocks must be split out. And while the Naval Constructor, like the commissioned officer, must conform to the *customs* of *the service*, he is allowed the privilege of thinking for himself, as was the case in this instance, which resulted in the conviction that the middle or bulkiest part of the ship was the weakest, and needed more support than the amount furnished by the intrinsic strength of the vessel; and accordingly, the bottom directly over the ways was shored down from the beams above, at proper intervals, extending quite the length of the midship body. These shores, it will be observed, were set up taut before the battering-ram was used outside; and it must be plain that as soon as the middle

of the vessel approached the end of the ways, which, in consequence of their elevated position, formed a fulcrum, and sustained a very large proportion of the entire weight of the vessel, which was transferred from the bottom to the deck-beams, and they, having all they should be required to bear, put upon them before the vessel was raised in her cradle, must now yield to their unnatural load, and, being fastened at each end, a rupture was the consequence. But this is not all: when the stern of the ship sought the requisite buoyancy to sustain it by plunging, the bow raised from the poppets or cradle, which fell off from the ship, when in her onward course the stern in its turn was raised by the excess of buoyancy, the bow again returned to the place where it left its cradle; but alas! it had fled, and no alternative was left but the rough passage of the slip, without any assistance or support, save the momentum acquired, which alone enabled the vessel to clear the launching-slip, embedding her keel deep in the mud on the opposite shore, while she filled and sank. She has since been raised, by the aid of vessels and pumps, and landed in the Dry-dock for repairs; but can she be made as strong as though the misfortune had not marked her for its victim?

We say that it may be done, but that it will, is very doubtful. If her sides are strained out of their natural sheer, it will most likely be necessary to remove the ceiling over the strapping, inasmuch as the straps are either bent, or their fastening is bent, whereas, had the strapping been of one inch round iron, screwed taut by the upper end and on the outside, it would have afforded protection to the midship body below the bilge, which the present mode of strapping the frame does not furnish. Again, if the vessel had, in addition to this, keelsons of iron in one continuous length, instead of live-oak keelsons in short lengths of 25 to 30 feet, she would have been sufficiently strong to have resisted the consequences of her unnatural position, and all would be well; as it is, it is indeed well. Better be strained over the end of the ways, than be ruptured over the summit of an Atlantic wave. And shall we learn a lesson by this expose of our flexible fabrics, or shall we go on depending on live-oak frame, inside strapping and square fastening for security, without reference to that mixture of material, without which, science and art fall as powerless on this thing of life as a moonbeam upon a mountain of ice. While the remembrance of one catastrophe still lingers, and the causes which produced it are still fresh upon the memory, another wave of disaster breaks at our feet, as if to render it one universal flow; and the Government vessels have also entered the encircling eddy, and are added to the list, bearing testimony to the truth of our remarks in the present volume, page 201, of the flexibility of our ships, and still we hesitate to use the means of prevention, and still maintain the monstrous heresy that the cheapest is the best for the merchant, or that the *customs of the service* are the best safeguards to avoid the responsibility consequent upon a recognition of those principles, which teach us that ship-building, like other arts, may be improved.

DISASTERS AT SEA.

STEAMERS.

Moira, (propeller) went ashore at Amherst Island, prior to Oct. 24.
John Tompkins, bound for Eastport, when near Amsterdam, in the Ohio, broke a crank and cylinder-head.
Jenny Beale, from Montgomery, collapsed a flue in entering the harbor of Mobile.
T. U. Bradbury, (propeller) went ashore on Beaver Island, Nov. 27.
Sallie Spann, was destroyed by fire, Nov. 22, on the Bigbee River, 90 miles from Mobile, two lives lost.
W. P. Sweney, from Alexandria, struck a snag, Nov. 19, and sunk.
Switzerland, Cincinnati for New-Orleans, came in collision with a vessel, Nov. 2, opposite Natchez, and sunk.
City of Huntsville, Memphis for Pittsburg, broke her shaft in the passage.
George Law, Chagres for New-York, went ashore outside the Narrows, prior to Nov. 30.
Admiral, St. John for Portland, was run into, Nov. 14, off Monhegan, by a schr. and had bulwarks stove.
Star of the South, (Am.) for the Crimea, got aground at Galatoria, Oct. 5.
William Penn, (Am.) Marseilles for Kamiesch, got aground at Gallipoli, prior to Nov. 17.
Red Jacket, (tug) of Philadelphia, was in collision with an unknown sloop prior to Nov. 6, and had wheel-house carried away.

SHIPS.

David Brown, Quebec for Bristol, was run into, Nov. 8, on the Banks of Newfoundland, by the ship Robert Parker, and sunk.
Robert Parker, came in contact with ship David Brown, Nov. 8, on the Banks of Newfoundland, and lost jibboom and cutwater.
Western Empire, Liverpool for New-Orleans, was seen ashore on the Tortugas, Nov. 6.
Richmond, New-Orleans for Boston, put into Havana, Nov. 16, for repairs, having been thrown on her beam-ends 14th inst.
Pleiades, Boston for Charleston, came in collision with ship Euphrasia, off Cape Cod, prior to Nov. 22, and had cutwater started.
Mary Ward, Boston for New Orleans, went ashore on Abaco, Oct. 29.
Wm. Frothingham, from Calcutta for London, put into Rio Janeiro, Sept. 27, with loss of rudder and otherwise damaged.
Alexandria, Baltimore for Havre, put into Norfolk, Nov. 14, with mainmast sprung, leaking, &c.
Cleopatra, Chincha Islands for Chesapeake Bay, sprung aleak and was abandoned, Nov. 24.
Floating Zephyr, Rio Janeiro for Philadelphia, lost sails in a heavy gale, Nov. 1.
Richmond, New-Orleans for Boston, was thrown on her beam-ends, Nov. 14, and had starboard-pump broken, and put into Havana.
Lavinia Adams, Liverpool for New-Orleans, ran ashore on Loo Key, Nov. 20.
Unknown, was passed, Sept. 17, lat. 38 08, lon. 47 47, burnt to the water's edge.
Isaac H. Boardman, Portsmouth, N. H., for New-Orleans, went ashore near Whale's Back, N. H., Oct. 17.
Challenger, Boston for San Francisco, split sails, &c., in a gale, near Cape Horn.
Competitor, Boston for San Francisco, lost head, &c., off the River Platte.
Viking, Boston for San Francisco, lost foretopsail and foretopmast, in a gale, Aug. 12, off the River Platte.
Chatsworth, from Boston, in entering Liverpool harbor, Oct. 22, came in contact with ship Euphemia, and had bulwarks stove.
Tamarlane, at Southampton, Oct. 17, for repairs, having sprung a leak in the English Channel.
Walter Scott, (Am.) while lying at Malta, Oct. 7, her cargo (coal) caught fire, and the ship was obliged to be scuttled.
Euphemia, while in Liverpool harbor, Oct. 22, was run into by ship Chatsworth, and lost jibboom and cutwater.
Unknown, (supposed American) burnt at sea, prior to Oct. 30.
Annapolis, Liverpool for Baltimore, went ashore on North Point, prior to Nov. 16.
Washington, of Sag Harbor, was lost near Diamond's Bay, by being stove by the ice, prior to Nov. 12.
Abeoni, sprung her foremasts off the River Platte, prior to Nov 9.
Denmark, went ashore at Selsey, about Oct. 20, was got off, and ran foul of a vessel and was badly damaged.
Hermacus Franciscus, (Dutch) Amsterdam for New-York, lost anchors, &c., Oct. 26, in a gale, and was brought into Ramsgate, England.

Kilby, (Am.) while in the harbor of Shields, Eng., was in contact with a vessel and carried away her mizentopmasts.
Unknown, (Am.) was passed, Oct. 14, in lat. 34 39, lon. 71 31, bottom up.
Underwriter. New-York for Liverpool, in going out of New-York harbor went ashore, Nov. 18, on the S. W. Spit.
Messenger, Marseilles for New-York, was run into by Br. barque Julia, of Jersey, Nov. 16, off Cape de Gault, and badly damaged.
Margaret Eliza, Buenos Ayres for New-York, went ashore on Long-Island Beach, near Rockaway, Nov. 17.
Ticonderoga, was run into, prior to Nov. 5, by a French steamer, at the Crimea, and badly damaged.
Abaelino, Calcutta for Boston, Nov. 19, was run into by barque Justice Story, and had bulwarks stove and was otherwise damaged.
Devonshire, New-York for London, Eng., sprung aleak, Sept. 25, and was obliged to throw part of cargo overboard.
Talisman, (Am.) Calcutta for London, Eng., recently experienced heavy gales the whole passage, by which she was badly damaged.
William Libbey, (Am.) Liverpool, Eng., for Calcutta, put back to port, having grounded off Formby Light, prior to Nov. 14.
Palestine, New-York for Liverpool, sprung aleak and shifted her cargo during the passage, prior to Nov. 15.
Frances, (Am.) Glasgow for Boston, put back to Cork, prior to Nov. 10, leaking badly.
Josephine, (Am.) Liverpool for Boston, put back to Cork, prior to Nov. 10, leaking badly.
Tahiti, (Am.) Androssan for New-York, put back to Cork, prior to Nov. 10, leaking badly.

BARQUES.

Nucleus, Chicago for Oswego, sprung a leak and put back to port, Nov. 23.
John Benson, Havana for New-York, experienced a heavy N. W. gale, Nov. 22, during which sprung aleak, had sails split, &c.
Black Warrior, Cleveland for Chicago, went ashore in the Straits of Mackinac, Nov. 11, and totally lost.
B. S. Shepard, was run into Nov. 9, by an unknown propeller, and lost jibboom.
Thos. E. Baxter, Savannah for Havana, went ashore on Abaco, Oct. 29.
Hallowell, went ashore at Long Point, Lake Erie, Dec. 3, three lives lost in rescuing the crew.
American Republic, Chicago for Buffalo, prior to Nov. 23, was in collision with a vessel and was badly damaged.
Hebron, from Glasgow, while rounding the Moro, prior to Nov., at Havana, struck on a rock.
Kremlin, Boston for Valparaiso, returned to port, Nov. 18, in consequence of having sprung a leak.
Clarissa, New-York for Trinidad de Cuba, went ashore near the latter port, about Nov. 2.
Gold Hunter, Matanzas for New-York, came in collision with the brig Sarah Gibbs, and was badly damaged.
Belle, Cape St. Lucas, California, for Talcahuana, was dismasted in a gale, Aug. 3.
Russell, Valparaiso for San Francisco, encountered a severe gale, Sept. 14, and was badly damaged.
Carrier Pigeon, Queenstown for Matanzas, was picked up, Oct. 21, derelict, and brought into the former port.
Parana, (Am.) London for Rio Janeiro, put into Plymouth, Oct. 27, leaky, with loss of sails.
Justice Story, Boston for Baltimore, was run into, Nov. 19, off Mantauk light, and was badly damaged.
Samuel Moxley, Jr., New-York for New-Orleans, went ashore on Bahama Banks, Nov. 3.
Augustine Victorine, (French) Gonaives for Marseilles, was lost at Great Inaqua, Oct. 8.
Katahdin, from Rochelle *via* Tampico, arrived at New-Orleans, Nov. 2, in distress.
Maid of Auckland, Leghorn for Boston, sprung aleak in a gale, Oct. 31.
Witch, Batavia for Salem, carried away bulwarks in a gale off Cape of Good Hope, about Aug. 25
Pacific, New-York for Cienfuegos, was run into by an unknown ship off Barnegat, Nov. 2, and was badly damaged.
Lamartine, Cadiz for New-York, sprung fore and mizzenmasts, split sails, sprung a leak, &c., in a gale, prior to Nov. 19.
Jasper, Charleston for New-York, split foretopsail and jib, and close-reefed-topsail, &c., in a gale, prior to Nov. 20.
Sarah, Boston for Pictou, N. S., ran ashore at Ship Harbor, Gut of Canso, about Nov. 16.
Brunette, Savannah for Belfast, Me., went ashore outside of Sandy Hook, Nov. 28.
Halifax, Boston for Halifax, put into Liverpool, N. S., Nov, 23, with loss of foremasts.
Susan, Rio Janeiro for Charleston, returned to port, Oct. 13, leaky.
Mentor, (Br.) Boston for Savannah, was totally lost on the North Breakers off Doboy Island, about Nov. 27.

BRIGS.

Manzanilla, Philadelphia for Portland, had foresail split, and lost deck load in a gale, off Cape Elizabeth, Nov. 23.
Attakapas, Rondout for Bangor, put into Newcomb Hollow, (near Highland Light, Cape Cod,) Nov. 23, leaking.
R. B. Clark, Eastport for Philadelphia, went ashore in Delaware River, in a gale, Nov. 21.
Ocean, from Nanticoke, C.W., was in collision with barque J. Sweeny, Nov. 11, and lost main-rigging, &c.
Fannie, Charleston for New-York, sprung foremast, split sails, &c, in a gale, prior to Oct. 29.
David Smart, while in the harbor of Buffalo, about Nov. 17, was run into by a brig, and had her bowsprit and head-gear carried away.
Constellation, while entering the harbor of Buffalo, about Nov. 17, ran into the brig David Smart, and was badly damaged.
F. P. Beck, Pictou, N. S., for Providence, encountered a heavy gale, Nov. 6, and carried away main-topgallantmast, split sails, &c.
Joseph Balch, Havana for New-Orleans, went ashore on the Chandelier Islands, Nov. 7, and was totally lost.
Paragon, Racine for Oswego, lost both anchors, near Beaver Island, in a gale, Nov. 23.
Minnesota, for Chicago, lost foreyard and both anchors, Nov. 23, in Lake Michigan.
Mary, St. John, N. B., for Providence, lost boats and split jib, off Cape Cod, prior to November 13.
John Stephens, St. Jago for New-York, put into Charleston, November 15, leaky, sails split, &c.
Lady of the Lake, Boston for Jacksonville, ran ashore two miles south of St. John's Bar, Fla., November 9.
Kingston, (Br.) Falmouth, Jamaica for Boston, was totally lost on Cape Antonio, November 2.
Unknown, (herm.) was passed November 12, near Hatteras, with a signal of distress flying.
Marcello, St. John, N. B., for Baltimore, recently came in collision with schooner Sea Gull, and had bulwarks stove.
Unknown, was passed November 13, near Block Island, dismasted and water-logged.
Antelope, (Br. November 18, was ran into by a raft and driven ashore in New-York harbor.
Sarah Gills, Boston for Savannah, came in collision with barque Gold-Hunter, and was badly damaged.
Annawam, Havana for Mobile, put back to port, October 29, leaky.
Kaffir, (Br.) Rio Hache for Liverpool, was lost at Great Inagua, October 6.
Rapido, (Spanish,) New-Orleans for Barcelona, put into Charleston, November 8, leaky.
Isabella Lawley, was wrecked at Sydney, Cape Breton Island, in a gale, about November 16.
Unknown, (herm.) was seen November 22, ashore near Baker's Island.
Lima, Liverpool for Quebec, was lost in Main-a-dieu Bay, Cape Breton, November 7, captain lost.
Helen Mar, Newark for Windsor, N. S., went ashore at Holmes' Hole, November 22.
Rebecca and Francis, Georgetown for Boston, put into Provincetown, November 24, with sails split, &c.
Venus, went ashore at Holmes' Hole, November 22.
Lydia Stover, Wilmington, N. C., for Portland, put into Holmes' Hole, November 27, with sails split, and part of deck load lost
Cape Fear, from West Indies, was below New-York, November 29, with loss of topsails.
Spirit of '76, with loss of topsails, Rio Janeiro for Baltimore, carried away foreyard, split sails, &c., in a gale prior to November 28.

SCHOONERS.

Charles Peaslee, from Savanah, was spoken Oct. 20th, with loss of boats, sails, &c.
James Gorham (sloop) at Somerset, lost mast and cabin by lightning, Oct. 27th.
Thebes, (brig) St. John's for Portland, went ashore at Musquash, about Oct. 30th, and was badly injured.
Congress, Machias for Gloucester, was in contact with an unknown schr. Oct. 29th, and lost mainsail and mainboom.
Challenge, Eastport for Baltimore, put into Newport Nov. 2d, with foremast sprung.
Maria Antoinette, (Belgian) was lost near Rio Grande, Brazil, previous to Sept. 5th.
Champion, Kingston, N. Y. for Stonington, went ashore at Hell Gate, Oct. 26th.
Julia and Martha, Boston for St. John's, N. B. went ashore on Hog Island Ledge, below Portland, Oct. 25th.
Abby Gale, Jacmel for Holmes' Hole, Oct. 20th, lost deck load in a gale.
Compeer, Ellsworth for Boston, sprung aleak, Oct. 29th.
Margeret A, (Br.) St. John, N. B. for Boston, came in collision with an unknown herm brig Oct. 29th, and put back.
Clara Evans, at Boston, Oct. 5th, from Malaga, sprung both masts, jibboom, &c, on the passage.
Mazeppa, arrived at Hyannis, Oct. 6th, with foremast gone.
Marie Louise (sup. Br.) went ashore in Trinity Bay, prior to Nov. 3d.
Gorman, for Cleveland, was towed into Erie, Pa., leaking, about Oct. 15th.

NOTICES TO MARINERS.

Lights at Mauritius—Harbor Lights.—The following notice to Mariners has been received at this office from the Hydrographic Office, Admiralty, London :—

"Referring to the notice No. 31, of this office, announcing the establishment of lights at the Mauritius on the first of December next, information has been received that the harbor lights of Port Louis therein mentioned, namely, Nos. 3 and 4 of that notice, may not be lighted on the same day as (Nos. 1 and 2) those of Flat Island and Canonnier Point.

"Mariners are therefore cautioned in using the sailing directions accompanying that notice, not to look for those lights, namely, the red light at the mouth of Grand River, and the green light on Cooper Island, when approaching the anchorage of the entrance of the harbor of Port Louis, until further notice is given from this office announcing the time when they will be lighted. But this notice will make no difference in the time of the lights of Flat Island and Canonnier Point being lighted, viz.—on the first day of December next.

Letter from the Superintendent to the Secretary of the Treasury communicating extract from the report of Lieut. Com'g James Alden, U. S. N., Assistant in the Coast Survey, upon the existence of a deposit of red sand inside of the bar of San Francisco Bay, Cal.

Coast Survey Station, Dixmont, Me.,
October 20th, 1855.

Sir :—I have the honor to communicate, in the following extract from a report made by Lieut. Com'g James Alden, U. S. N., Assistant in the Coast Survey, the existence of a deposit of red sand inside of the bar at the entrance of San Francisco Bay, Cal.

Lieut. Com'g. Alden says, in his letter dated July 20th : "I made a careful examination of that locality just previous to leaving San Francisco, and the result fully sustains our first observations.

"This marked peculiarity (the red sand) exists only inside of the curve or 'horse shoe' formed by the bar, and as far in as *the heads*, comprising an area of less than four miles square.

"It is thought that the red sand will serve as a safe and sure guide to vessels entering San Francisco in thick weather, and to steamers it may be regarded as of great importance.

"Passing up the coast to the northward of St. Piedra, keep in ten or twelve fathoms water, gradually shoaling to the bar in from five and a half to six fathoms, and proceeding on, the water will soon deepen inside the bar, where the red sand will verify the position ; after which steamers, with proper care, can make good the entrance in the thickest weather."

I would respectfully request authority to publish the foregoing for the benefit of navigation on the western coast.

Very respectfully, yours,

(Signed) A. D Bache, Sup't.

Hon. James Guthrie,
Secretary of the Treasury.

Capt. Palmer, of the whaling ship Kingfisher, of New Bedford. wrecked on the N. E. end of Company Island, considers the loss of his ship owing to the land being at least twenty-five miles to the E. S. E. of where it is laid down in Blunt's charts of 1853, and the change of current which probably took place near the time of going on to the reef, for a strong current was found to set to the S. W. by W., by the ships that took them off. Capt. P. also states that Company Island, instead of running N. N. E. ½ E. and S. S. W. ½ W., as laid down on the charts, ends as far to the east as N. E. by E. ½ E., true, and that a dangerous reef makes off the N. E. end about 8 miles.

The Following Changes have been made in Vineyard Sound, Massachusetts :—

A black buoy, of the 2d class, numbered 3, has been placed on the west end of the south part of the Horse Shoe Shoal.

A black nun buoy, of the 2d class, numbered 1, has been placed on the S. W. part of the Horse Shoe, one mile to the southward of the dry spot.

A red nun buoy, of the 2d class, numbered 8, has been placed on the west end of Norton's Shoal.

A nun buoy, of the 3d class, red and black horizontal stripes, has been placed on the east end of the Hedge Fence Shoal.

The black spar buoy, on the east end of the Hedge Fence, has been removed.

A nun buoy of the 2d class, red and black horizontal stripes, has been placed on the west end of the Hedge Fence Shoal.

The black spar buoy, on the west end of the Hedge Fence, has been removed.

A red can buoy of the 2d class, numbered 6, has been placed on the east of the Squash Meadow Shoal.

Muskeget Channel.—A red spar buoy, numbered 2 has been placed on the Muskeget Shoal, west end.

A red spar buoy, numbered 2, has been placed on Mutton Shoal, west end.

A red spar buoy, numbered 4, has been placed on the S. W. part of Hawes' Shoal.

A red spar buoy, numbered 6, has been placed on the N. E. end of Hawes' Shoal.

A black nun buoy, of the 2d class, numbered 5, has been placed on the S. E. part of the Horse Shoe Shoal.

The black spar buoy, on the S. E. part of Horse Shoe Shoal, has been removed.

A spar buoy, with black and white perpendicular stripes, has been placed in mid channel, between Roger's Shoal and Monomoy beach, Monomoy light-house bearing S. E. ¾ E. and the Shovelful light-vessel S. ½ E.

A spar buoy, with red and black horizontal stripes, has been placed on the north end of Rogers' Shoal.

A spar buoy, with red and black horizontal stripes, has been placed on the south end of Rogers' Shoal.

A black spar buoy, numbered 7, has been placed on the south end of south shoal spot north of Rogers' Shoal.

Salem Harbor.—Notice is hereby given that the red spar buoy, No. 6, on the east end of Whale's Back, and the black spar buoy, No. 1, on the Middle Breaker, have this day been replaced.

Manchester Harbor.—The black spar buoy No. 1, on Saulis Rock, has this day been replaced.

Lieut. T. A. Craven, United States Coast Survey, in re-examining the New-York Harbor in reference to the encroachments, has determined the position and extent of a shoal in the main ship channel, below the Narrows. Lieut. Craven says in his report to the Superintendent, A. D. Bache, Esq :—

"Its position is 2067 yards S. 30° E. (true) from the Light-house on Staten Island. It lies north and south, and its length in that direction is 503 yards. The breadth from east to west is 164 yards. Soundings eighteen feet at low water. This shoal is composed of sand and shells, or more strictly, is a *shell bank*, and I recommend placing a buoy on it."

In accordance with this recommendation, Professor Bache has asked of the Light-house Board that the buoy may be placed.

The Bell Float off Fenwick's Island buoy, is reported by Mr. J. Marshall, pilot, who landed at Lewes, Del., 11th inst., to be much injured, with only one clapper attached—the rest having been broken off by the severity of the late storm.

The buoy on Babson's Ledge is broken off, which renders it dangerous to vessels beating into Gloucester harbor.

Notice is hereby given, that the iron buoy on Davis' Ledge has been removed, and a second class nun buoy placed in its stead. It is painted black, with the words "Davis' Ledge" in white letters on three sides.

King's Island.—We have received the following sailing direction for King's Island from Mr. G. Budd, who was recently on the island with Captain Weeks, the purchaser of the wreck of the Whistler:—"Vessels, if caught on the lee shore on the western side of King's Island, may steer boldly for Franklin Road. The Admiralty chart is totally erroneous. Steer boldly for the north point of New-Year's Island—there is no safe passage for a stranger between them. Keep the lead going and hug the shore till you pass the second sandy part and choose your anchorage according to the draught of the vessel. There is no safe passage to the northward, between New-Year's Island and main. Elizabeth Rock—the rock on which the Elizabeth struck—bears from the house on the station (a very conspicuous object) N. W. ¼ W. ; North Point, New-Year's Sound N. W. ¾ N ; South Point, New-Year's Sound W. N. W. In approaching Franklin Road, the kelp (fucus giganticus,) in stormy weather, may for the moment intimidate a stranger, but there is no danger with ordinary attention to the lead."—*Argus*, Aug. 2.

A few days later the same paper published the following paragraph :—

King's Island.—With reference to the directions which appeared a few days ago in our columns for making the Franklin Roads, we have been advised that the safer course for the navigation of that portion of the seaboard of King's Island, is to rely upon the charts laid down by the Beagle survey, as being more accurate than any other. When the light-houses are erected on the island, by the co-operation of the several Australian colonies, a more accurate description of the bearings of the channels and of the rocks lying near King's Island and New-Year's Island will doubtless be published.—*Argus*, Aug 7.

Buoys for Cape Roman Shoals and bar at Bull's Bay, South Carolina.—A first class nun buoy, painted with black and white perpendicular stripes, and a black flag on the staff, has been placed in fifteen feet water at low tide, in the Slue Channel, Cape Roman Shoals ; Cape Roman light bearing N. W. by W. ½ W. ; North point of Cape Island, N. W. by N. This buoy must be passed close to on either side ; courses from buoy out of the Slue, S. W. by W and N E by E.

Also, a second class can buoy, painted with white and black perpendicular stripes, in three fathoms water, low tide, off the Bar at Bull's Bay ; North point Bull's Island, N. W. by W. ; Bull's Light, W. N. W. ; South point Raccoon Key, N. W. by N. ¼ N.

Note—Courses and bearing are magnetic.

SINGAPORE, SEPT. 22.—Capt. Taylor, of the brig Mariner's Hope, has furnished the following memorandum :—The shoal laid down on Horsburgh's Chart as imperfectly known lying in a S. S. W. direction from the Tukan Bisi Islands, laid down on the chart in lat. 4 50 S , and lon. 120 30 E., I passed within half a mile, and found it a dry sand bank from four to six feet above water, and extending some distance in a S. S. W. direction on the outermost edge, and as far as the we could distinguish in a S. E. direction ; a very dangerous bank to pass in the night, or in thick weather, as it cannot be discerned at any distance from the deck.

The Vineyard Sound Light Vessel, stationed at the " Sow and Pigs," broke from her moorings on the evening of the 23d inst., at 20 minutes past 8 o'clock, and arrived at New Bedford. She will be replaced upon the station at the earliest possible moment.

LIGHTS AT MALAMOCCO, VENICE.—Official information has been lately received that the maritime authorities of Trieste have given notice, that on and after the 1st day of November, 1855, two temporary harbor lights would be exhibited at the entrance of the port of Malamocco, Venice.

The lights will be fixed, of the natural color, and of the fourth order of the system of Fresnel. They stand at a height of 45 feet above the level of ordinary high water, and will be visible in clear weather at a distance of 12 miles.

The eastern or outer light is placed upon the round head of the inner Mole of the Rochetta, on the north side of the channel, at a mile and a third within the entrance. The western light stands in the lagoon on the southern side of the entrance of the Spignon canal, at a distance of 1,380 yards from the outer light.

The lights, in one bearing N. W. by W. nearly, lead in a mid-course between the two Moles, now in course of construction. The northern Mole or breakwater is already above water; the southern Mole is only partly visible. The width of entrance between the moles is about 510 yards.

All bearings magnetic. Variation 14 34 West.

ALTERATION IN BUOYS.—Official information has been recently received that the French Government has given notice, that a new arrangement of the buoys in Dunkerque Roads was completed on the first of the month of October, 1855, in place of the former, and that the following instructions are, in consequence, to be observed by vessels entering either by the eastern or western passage, viz :

All buoys and beacons painted *red* are to be left to starboard, and those painted *black* are to be left to port, by vessels entering the roads from sea ; and buoys painted with alternate red and black horizontal bands may be passed on either hand.

The foregoing distinction of color is not applied to beacons or turrets, these being painted white above the level of high water.

Wharping buoys are painted white.

The small rocky heads in the frequented channels are painted in the same manner as the buoys, with this reservation, that the most conspicuous part of them is thus only painted when the surface they present is so considerable that it becomes unnecessary to do more, in order to their being readily distinguished ; and they are not painted at all when they are mostly beneath the surface, or are covered with weed.

Every buoy or beacon bears, in full length, or abbreviated characters, the name of the shoal or rock which it is meant to distinguish, and also, its number, showing its numercial order in the same channel. These numbers commence from seaward ; the even numbers on the red buoys to be passed on the starboard hand, and the odd numbers on black buoys to port.

The letters and numbers are painted white on the most conspicuous parts of the buoys, and from ten to twelve inches high. The masts of the beacons which do not present sufficient surface, are surmounted for this purpose by a small board. All the jetty heads and turrets are painted above the half tide level ; and on the former, a scale of metres is marked, commencing from the same level.

BUOYS IN VINEYARD SOUND, MASSACHUSETTS.—A red nun buoy of the 2d class, numbered 4, has been placed on the west end of the Squash Meadow shoal. The red spar buoy on the west end of the Squash Meadow will be removed.

The red spar buoy on the east end of Tuckernuck shoal will be removed. The red nun buoy, numbered 12, will remain.

A can buoy of the 1st class, with red and black horizontal stripes, has been placed on the east end of the Middle Ground shoal.

A nun buoy of the 1st class, with red and black horizontal stripes, has been placed on the west end of the Middle Ground shoal.

A red nun buoy of the 2d class, numbered 2, has been placed off the point of the Devil's Bridge.

The buoyage of Vineyard sound and tributaries is completed. In coming up the sound from the westward, and in entering the adjacent harbors, *red* buoys with even numbers must be left on the *starboard* hand ; *black buoys* with odd numbers on the port hand ; buoys with *red* and *black horizontal stripes* are on *obstructions*, with channels on either side ; buoys with *blaek and white perpendicular stripes* are in mid-channel.

FOG BELL NEAR MANHEIGIN LIGHT-HOUSE, MAINE.—A fog bell has been placed on the south west side of Manana island, about one mile west of Manheigin light-house.

The bell weighs 2,500 pounds, and will for the present be rung by the hand. It will be sounded in thick weather. Pilots and masters of vessels who imagine that they are getting too near Manheigin island, and do not hear this bell, are requested to sound their whistles or bells, and in all cases will be answered by the fog bell when they are heard by the keeper.

The bell is placed on a wooden frame, 24 feet high, which is joined to the keeper's house. The frame and house are painted brown.

The elevation of the bell above the level of the sea is about 55 feet.

Shoal off the North End of Oland.—Official information has been lately received through the Department of State, that the Swedish government has given notice that a rocky shoal, having only 15 feet water over it, has been discovered in the Baltic, lying N. N. E. ½ E., distant 7½ miles, from the north end of the island of Oland.

The shoal consists of stone in level strata with abrupt edges; the shallowest portion, about 70 yards long, forms its northern edge, from which it extends to the S. S. E. for about 4 cables' length having 3, 4, and 5 fathoms depth; after which the depth gradually increases; but on the N., N. E., and N. W. and S. W. sides the water deepens abruptly, and the lead gives no warning.

From the shoal, Oland north light-house bears S. S. W. ½ W. (S. 26° ½ W.); Jungfrun island, western point, S. W. ⅝ W. (S. 53° W.); Huno Bote, W. N. W. ½ N. (N. 62° W.)

All bearings are magnetic. Variation 12° ½ W.

Change in the Light of Greifswald Island, Coast of Prussia.—Official information has been recently received that the Prussian government has given notice, that on and after the 1st of October, 1855, a *revolving light* would be exhibited at the new tower, recently completed on the northeastern end of the island of Greifswald, on the coast of Prussia, at which time the two vertical fixed lights hitherto in use on that island would be discontinued.

In order to distinguish it from the adjacent fixed lights of Cape Arcona to the north, and Stettin to the south, as well as the revolving lights of Dars Point to the west, and Jershoft to the east,—

The Griefswald light is now a revolving light, presenting alternately a light of the *natural color* and a *red light*, these two lights being separated from each other by equal intervals of darkness.

The *duration* of each of these lights—that is, of the natural colored light, and the red light, and also that of the darkness between each of them—is 45 seconds, or three-fourths of a minute.

The tower is constructed of brick, the mortar being scarcely visible; and the light, which is 154 feet above the level of the sea, may be seen in all directions at the distance of 17 miles from the deck of a vessel.

It is in latitude 54 14 45 N., and longitude 13 55 27 east from Greenwich.

Fixed Light on Cape La Plata, near Passages.—Official information has been recently received that the Spanish government has given notice, that on the 1st of October, 1855, a fixed light of the natural color would be exhibited on Cape La Plata, in the province of Guipuzcoa, on the north coast of Spain, to the westward of the entrance of the Port of Passages.

The height of the light is 486 feet above the level of the sea, and will be visible from the deck of a ship about 14 miles in clear weather.

The light-tower stands in latitude 43 20 21 north, and longitude 1 56 27 west of Greenwich.

The Harbor Master at New-Orleans gives notice, that all vessels arriving at that port, having discharged their cargoes, or ballasted below, in either the First, Second, or Third Districts, and then intending to come up in the Fourth District merely for the accommodation of loading or lying up, must give at least four hours' notice of such intention to the Harbor Master of the Fourth District, so that he may direct them where to moor. No one is allowed to select a berth or locate such vessel, except the Harbor Master or his deputy. This rule must be rigidly adhered to, otherwise removing, extra labor and expense may be incurred.

The Charleston pilots represent the South Breaker Buoy of Ship Bar as being entirely out of its proper position, and request its early replacement.

Change of Light at Prospect Harbor, Maine.—Notice is hereby given, that on the 1st of January, 1856, the fixed light now at Prospect Harbor, Maine, will be discontinued, and that on that night, and during every night thereafter, there will be shown a revolving light, instead of it.

The illuminating apparatus will consist of three argand lamps and twenty-one inch reflectors, and the interval between the flashes will be one minute.

During the month of November, the Nun and Can Buoys marking the channels in the Lower Bay of New-York, will be removed for the winter, and Spar Buoys colored and numbered in the same manner, will be put in their places.

The bark Fanny Major, at Sydney, N. S. W., Aug. 16, from San Francisco, reports:—July 25, lat. 15 45 S., long. 176 54 E., passed ever a coral reef not laid down on the chart, and upon sounding found ten fathoms of water. The reef extended east and west a mile and a half, and about half a mile north and south.

Letter from the Superintendent to the Secretary of the Treasury, communicating the position of a dangerous rock on Cortez Bank, coast of California, determined by Lieut. Com'g. Archibald McRae, U. S. N., Assistant in the Coast Survey:

"Coast Survey Station, Dixmont, Me., Oct. 10, 1855.

"Sirs:—I have the honor to report, that under the instructions of Lieut. Com'g. James Alden, U. S. N., Assistant in the Coast Survey, a dangerous rock on Cortez Bank, off the extreme southern coast of California, was sought for by Lieut. Com'g. Archibald McRae, U. S. N., Assistant Coast Survey, and determined to be in lat. 32° 29 N., and lon. 119° 64½ W. (both approximate.) The shoalest water on the rock is reported by Lieut. McRae to be three and a half fathoms, subject to a possible tidal reduction of six feet, which might reduce it to two and a half fathoms, or fifteen feet.

"Lieut. McRae placed a buoy composed of two casks, with a flagstaff between, upon the shortest part of the ledge to which this rock belongs. The buoy could be seen in clear weather above three miles.

(Signed,) "A. D. Bache, Superintendent.

"Hon. James Guthrie, Secretary of the Treasury."

LAUNCHES.

At Bath, Me., Nov. 28, by Messrs. Houghton & Sons, ship Pocahontas, 1100 tons, for a freighter.

At Bath, Me., Nov. 27, by Messrs. E. & A. Sewall, ship Kineo, 800 tons.

At Portland, Me., Nov. 27, by Ralph Kelly, Esq., ship 700 tons, not named.

At Greenpoint, L. I. Dec. 10, by J. Simonson, Esq., steamer Vanderbilt, 5100 tons, for New-York and Havre Line.

At Greenpoint, L I, Nov. 13, by Edward F. Williams, Esq., schooner William H. Gilliband, 373 tons.

At New-York, Nov. 25, by John English, Esq., steamboat Livingston, 235 on L. L. 34 beam, 12ft. hold, 900 tons.

At Medford, Mass. Nov. 28, by James O. Curtis, Esq., ship Conquest.

At East Dennis, Me., Nov. 22, by Messrs. Shenerick, ship Wild Hunter, 1100 tons.

At New Bedford, Mass., Nov. 24, by S. Damon & Co., a ship of 367 tons.

At New Castle, Me., Nov. 14, by Messrs. Teague & Austin, ship Indian Hunter, 1300 tons.

At Medford, Mass., Nov. 17, ship Electric Spark, 1250 tons.

At Blue Hill, Nov. 9, by T. Y. Davidson, a barque of 350 tons, not named.

At Rockland, Me., Nov. 10, ship Squando, 1100 tons.

At Thomaston, Me., Nov. 10, barque Nineveh, 400 tons.

At Frankfort, Me., Nov. 14, by Messrs. Treat & Co., barque James M. Churchill, 420 tons.

At Thomaston, Me., Nov. 14, by Messrs. O'Brien & Watts, ship Vesper, 1600 tons.

At East Boston, Nov. 17, by Samuel Hall, Esq., barque Quickstep, 520 tons.

At Bath, Me., Nov. 15, by Jenks, Harding & Co., for freighting trade, ship William Cummings, 890 tons.

At Quincy Point, Mass., Dec. 8, by George Thomas, ship Shakspeare, 1300 tons.

At Columbia, Me., Nov. 23, by Messrs. L. B. Grace & Co., a Herm. brig, 375 tons, not named,

At Chelsea, Mass., Dec. 8, by John Taylor, Esq., ship Derby, 1000 tons.

At East Boston, Nov. 20, ship Golden Fleece, 1500 tons.

At Middletown, Conn. Nov. 15, a schooner, Sea Nymph, 175 tons.

At Boothbay, Me., Nov. 15, by Messrs. William & J. Seavey, brig H. G. Berry, 325 tons.

At Warren, R. I., Nov. 24, ship Sowanset, 800 tons.

At Fell's Point, Baltimore, Md., Nov. 21, barque William H. Newman, 370 tons.

At Freeport, Me., Nov. 10, by Messrs. Briggs, Means & Cushing, barque Joseph Halle, 600 tons.

At South Salem, Mass. recently, brig Mary Wilkins, 266 tons.

At Farmingdale, Me., Nov. 10, by George Pierce, Esq., bark Nueces, 400 tons.

At Boothbay, Me., Nov. 9, by Messrs. Sargent & White, barque Windward, 530 tons.

At Eden, M., Nov. 10, brig Lodi, 200 tons.

At Cumberland, Me., Nov. 10. barque Storm King, 375 tons.

At Sedgwick, Me., Nov. 9, brig Ocean Traveler, 225 tons.

At Richmond, Me., recently, ship Charles D. Merwin, 700 tons.

At Belfast, Me., recently, ship Granite, 1050 tons.

At Rockland, Me., Nov. 22, schooner Excelsior, 175 tons.

At Rockland, Me., recently, schooner Baltic, 146 tons.

At Belfast, Me., Nov. 22, by Samuel Otis & Co., Herm. brig Samuel Otis, 219 tons.

At Belfast, Me., Nov. 23, by Messrs. C. Carter & Co., ship Lady Blessington, 1000 tons.

At Belfast, Me., Nov. 26, by Messrs. John Pierce & Co., a ship, 650 tons, not named.

At Lubec, Me., Nov. 23, by Jeremiah Kennedy, Esq., schooner Gun Rock, 180 tons.

At Rockland, Me., Nov. 25, by Sanford Starrett, Esq., barque Caroline Ellms, about 400 tons

At Portland, Ct., Nov. 27, barque J. Godfrey, 500 tons.
At Mathews, Co. Va., recently, ship Resolution, 520 tons.
At Mystic Bridge, Conn., Nov. 13, by Messrs. G. Greenman & Co., ship Leah, 1400 tons.
At Bath, Me., Nov. 10, by Messrs. Howard & Parker, ship Stephen Brown, 741 tons.
At Columbia, Me., Nov. 23, by Messrs. L. B. Grace & Co., a Herm. brig, 375 tons, not named.
At Harrington, Me., recently by Messrs. E. P. Nash & Co., schooner Latilla.
At Bowdoinham, Me., previous to Nov. 20, by Gen. Berry & Sons, a ship about 1280 tons, not named.
At Bath, Me , Nov. 20, by Messrs. G. F. & J. Patten, a ship of 950 tons.
At Warren, Me., Nov. 8, by William Shear, Esq., barque Benjamin Burgess, 300 tons.
At Sullivan, Me., Nov. 26, by Messrs. Ingalls & Shephard, brig Hancock, 289 tons.
At Bath Me., Dec. 6, by Sewall & Small, barque Scio, 450 tons.
At East Boston, Nov. 19, by Paul Curtis, ship Golden Horn, 1500 tons.
At Pittston, Me., recently, by William Bradstreet, Esq., ship Washington, 1200 tons.
At Frankfort, Me., Nov. 22, by Messrs Treat & Co., schooner Hattie Hilliard.
At New Bedford, Nov. 26, by Messrs. Damon & Co., barque Helen Mar, 367 tons.
At Medford, Mass., Nov. 28, by James O. Curtis, ship Conquest, 1100 tons.
At Damariscotta, Me., recently, by William Hitchcock, Esq., ship Criterion.
At Machias, Me., Nov. 15, by E. Pearson, Jr. Esq., brig Col. Penniman, 250 tons.
At Bath, Me., Nov. 5, by Trufant, Drummond & Co., ship Herald, 670 tons.
At Pembroke, Me. Oct. 25, by Hayden & Pittengall, ship Planter.
At Pembroke, Me., Oct. 27, by James M. Lincoln, Esq., barque Meaco, 313 tons.
At Brewer, Me., Oct. 25, by Jeptha Richardson, Esq., barque Damon, 400 tons.
At Clayton, N. Y., by John Oades, Esq., schooner Amelia, 343 tons, for lake trade.
At Kennebunk, Me., Nov. 25, by Edmunds & Littlefield, ship Regulus, 650 tons.
At Buffalo, recently, by Bidwell, Banta & Co., schooner John P. Hale, 138½ ft. long, 25½ ft. beam, 10 ft. 10, in hold.

SALES OF VESSELS.

Barque James W. Paige, 199 tons, built at Medford, Mass., 1841, sold in Boston, terms not known.
Barque Old Hickory, 431 tons, 3½ years old, built at Boston, sold for $26,500, equal to cash.
Brig Helen Maria, 100 tons, built in Me., sold at about $9,000.
Ship Mary & Martha, of New Bedford, 317 tons, sold in Boston, terms not known.
Barque Prudent, (Whaler) 298 tons, of Stonington, Con., sold at auction recently.
Brig Gen. Taylor, 8 years old, built in Me., sold for $1,700.
A brig, 179 tons, 5 years old, sold for $7,000, for Para, S. A. trade.
Brig Saguna, 225 tons, U. S. Meas., built at Liverpool, N. S. 1849, sold Nov. 23, for $4,625 cash.
One-sixteenth of Ship Kutusoff, (Whaler) sold by auction at New Bedford, Mass.
Two-fiftieths of Steamer Ericsson, her outfit, sold Nov. 24, for $4,000 cash.
Two-thirty-twos of ship William & Henry, (Whaler) of Fairhaven, sold by auction Nov. 22, for $635.
Barque Architect, (New) 400 tons, built at Rockland, Me., sold for $20,000.
Ship Lebanon, 696 tons, 7 years old, built at Newburyport, Mass., sold for $33,000.
Three-fourths of brig Lucretia, 167 tons, 7 years old, built at Warren, R. I., sold at the rate of $6,000.
Barque Matilda, 419 tons, 5 years old, eastern built, sold, terms not known.
Ship Ellen Austin, 1698 tons, 6 months old, built at Newcastle, Me., sold for $90,000, equal to cash.
Barque Turk, 197 tons, 15 years old, sold in Boston for $5,200.
Brig Oceanus, 242 tons, 21 years old, sold at Boston for $5,000.
Ship Sacsusa, about 300 tons, 6 years old, sold, terms not known.
Barque Rhodes, 480 tons, 8 years old, built in Me., sold at New Orleans, for $14,000 cash.
New ship, on stocks, at South Boston, 1150 tons, sold for $73,000.
Barque Pamphylia, 250 tons, 4 years old, built at Brewer, Me., sold for $9,000.
Nine-sixteenths of ship Hannah Crocker, built at Bath, Me., 499 tons, 6 years old, ship and outward freight, sold at the rate of $23,000.
One-eightieth of ship James Edwards, sold at New Bedford, Mass., Nov. 14, by auction, at the rate of $10,000.
Steamer Statesman, sold Nov. 26, at Cincinnati, Ohio, for $10,000.
Schooner Montgomery, sold at Buffalo, Nov. 27, for $7,000.
Steamer Lady Elgin, (a lake craft) sold to A. T. Spencer & Co., to sail in the Lake Superior Line

(From the Oswego Times and Journal.)

SIGNAL LIGHTS.

OSWEGO, *November 20th.*

A Word to Masters and Owners of Steam and Sail Vessels Navigating the Lakes:

ON previous occasions, attention has been called to the subject of signal lights on both steam and sail vessels navigating the lakes; and as collisions and other accidents have become so frequent of late, I would again, respectfully, though earnestly, call attention to the Act of Congress of 1840, which requires that all steam and sail vessels shall be provided with signal lights to be carried and shown in a manner prescribed in that law, and which is generally understood and adopted by all steam vessels, and is no less necessary or binding on sail vessels. To that class I would more particularly call attention, as it is evident that less attention is paid to the requirements of the law than the magnitude and position of their business demands, and it is quite doubtful whether all who are in command of vessels are aware that such a law exists.

The law is explicit on that point, and requires all sail vessels, for the security of life and property, to carry during the night season a red light when on the starboard tack, and when on the larboard tack a green light, and when going off large, or before the wind, or at anchor, a white light. If these rules were strictly and faithfully complied with, by all having command of vessels, collisions and other casualties would be less frequent. There is but little doubt that one of the most fruitful causes of collision between vessels is the absence of proper signal lights; and as it is not clear that all who are entrusted with the command of vessels fully appreciate the importance of some established rule or custom to be observed, induces me, in this connection, to respectfully suggest the propriety of observing rules established and practiced years ago; when two vessels are beating to windward, or opposite different tacks, the vessel on the larboard tack to keep her course when approaching, the other to bear sway and pass under the stern of the former until she has crossed her wake, then again haul her to wind and pursue her course as before. This custom, if uniformly adopted and adhered to by all, cannot fail to inspire confidence and insure safety, when it is understood the vessel having her larboard tacks aboard has the right of way, under all ordinary circumstances.

In conclusion, I would say, the remarks here made have been prompted by no other motive than a sense of duty, believing we are all bound to do everything in our power to render the lake navigation safe, and, if possible, prevent in future a recurrence of collisions and other accidents; and I trust the suggestions here made, on this important subject, will be viewed in the same spirit that has actuated me.

A. WALKER, *Supervising Inspector Ninth District.*

OUR STATE ROOM.

H. P. C.'s letter has been received and contents noted. The book he desires is probably the *General Navy Register, Laws, &c.*, published by Mechlin & Winder, Washington, D. C., 1848.

Lieut. Dominick Lynch, U. S. N., who was furloughed by the "Efficiency Board," has command of the Liverpool packet ship Escort.

Late Lieut. L. B. Avery, U. S. N., who was dropped by the "Efficiency Board," has command of the clipper ship Golden City.

PROMOTED.—Major John Harris, of the Marine Corps, to Lieut. Colonel, to fill the vacancy occasioned by the death of Lieut. Colonel S. Miller, and ordered to Philadelphia.

Letters have been received from the East India squadron, stating that the sloop Macedonian, (flag-ship,) Commodore Joel Abbott, commander-in-chief of the squadron, was at Shanghai on the 6th of September last; that the steam frigate Powhatan, Capt. William J. McCluney, was at Hong Kong at the same date; and that the sloop Vandalia, Commander John Pope, was also at Hong Kong on the 23d of August last. Several deaths are reported, but no names are given.

PROPOSED TESTIMONIAL TO DR. KANE.—It is proposed to present to Dr. E. K. Kane, the intrepid Arctic navigator, a suitable testimonial, in view of his signal services, and the peculiar hardships endured by him in their performance. The Baltimore *Sun* has the following:—We learn from a friend of our former fellow-citizen, Mr. George Peabody, who is now so widely known as the "American merchant" of London, that he has already, with his accustomed judicious liberality, offered the sum of fifteen hundred dollars as his contribution towards a general public testimonial—one thousand dollars for Dr. Kane, and five hundred dollars for his comrades. This tender being made direct to Dr. Kane, he is understood to have promptly declined it, for himself, on the ground of his unwillingness to allow his name to be used in connection with any testimonial of a pecuniary nature. He has, however, referred back to Mr. Peabody the disposal of the subject as far as it relates to the crew.

REVENUE MARINE OFFICERS ORDERED.—Second Lieut. James D. Usher has been ordered to cutter Dobbin, on the Wilmington (N. C.) station, and detached from the Robert McClelland, on the Mobile station.

Second Lieut. John M. Nones has been detached from the Dobbin, and ordered to the cutter Forward, at Wilmington, Del.

Second Lieut. B. J. Killam has been detached from the Forward, and ordered to the cutter Harrison, at Oswego, N. Y.

First Lieut. John A. Webster, Jr., has been detached from the cutter Caleb Cushing, at Portland, Me., and ordered to the Forward.

First Lieut. W. J. Rogers has been detached from the Forward, and ordered to the Cushing.

A superabundance of Nautical and Naval matter precludes our notice of the war, unless it be of a naval character.

NEW BOOKS.—*The Prison of Waltevreden*, by Capt. Gibson, we have read, in spite of our want of time and space to review other new books this month, because it is one of the most readable and entertaining nautical books we have ever seen.

At a meeting of the U. S. Naval Lyceum, at the Navy Yard, Brooklyn, Dec. 1, 1855, the following resolution was offered, and being duly seconded, was unanimously adopted: *Resolved*, That the thanks of the Lyceum are tendered to the Publishers and Editors of the U. S. NAUTICAL MAGAZINE AND NAVAL JOURNAL, for their Illustrated Catalogue of its Library now in the course of publication, and that we recommend their Magazine to the patronage of the Navy.

From the Southern Argus, November 2.

THE RELIEF FUND.

NAVAL CONTRIBUTION.—The hearty generosity of the sons of the Ocean, and their universal disposition to lend a ready ear to every tale of distress and suffering, are as familiar to all as household words. This noble characteristic of the true hearted sailor, has been frequently displayed, of late, in the liberal contributions which have come from various sources connected with our gallant Navy, for the relief of the suffering communities of Norfolk and Portsmouth—and, to day, we are apprised of another of these generous outpourings, through a letter to the Acting-Mayor of the City, transmitting the handsome sum of five hundred dollars, as the contribution of the officers and crew of the United States steamer "Saranac," at present on the Mediterranean station. The letter is from Lieut. C. B. Poindexter, the executive officer of the ship, and couched in feeling and appropriate terms, as follows:—

(*Herald.*)

U. S. STEAM FRIGATE SARANAC,
Genoa, October 1st, 1855.

MY DEAR DOCTOR:—There is not a heart on board of our ship that does not deeply feel for the unfortunate people of Norfolk and Portsmouth, and sympathize with them in the sickness, death and sorrow, that have desolated their homes.

As the Executive Officer, I have been asked to send the enclosed contribution from the officers and crew of this ship, which, although small, is given freely, with the hope that it may be found useful in alleviating the sufferings of the poor.

The enclosed draft is for $500—which we wish to be equally divided between the two towns, and you will please give to the proper persons the respective amounts. If the sickness should no longer exist, on the reception of this letter, the poor widows and orphans of those who have fallen victims to the fever are to receive the money.

Yours with regard,
C. B. POINDEXTER,
Ex. Officer Saranac.

DR. N. C. WHITEHEAD.
Mayor of the City of Norfolk.

OUR LOG BOOK.

We have nearly completed arrangements for a monthly reckoning of accurate Naval and Nautical observations, and such changes in the current of events as will present a convenient news record as we drift along, and a concise reference table for future use.

Navy Yard, Brooklyn.—A new system appears to have been instituted by the Department; the Mastership is dispensed with, and a third lieutenant,—Lieut. J. E. De Haven—ordered instead.

The Inspection Department, under the direction of Purser Gibson, exhibits great activity. Supplies under the late contracts being received, stored and forwarded to foreign stations with the utmost dispatch.

For the greater part of the past year there have been more than two thousand mechanics and laborers employed in the Yard. Large brick edifices have arisen as if by magic from the old marshes, which have become solid foundations, and the grounds are in all respects much improved, both in usefulness and appearance.

The steamer City of Boston, which was purchased by the Government for the Arctic Expedition in search of Dr. Kane, but afterwards found unfit for that service, has been thoroughly overhauled, name changed to Dispatch, and put in command of Lieut. Thos. M. Crossan, to be used for such service as her name indicates.

Navy Yard, Boston.—The steamer Fulton sailed on the 9th ult., for the West Indies.

The following is a list of the officers attached to the new steamer Merrimac, nearly ready to go on her trial trip:—Commodore F. H. Gregory; Lieutenants G. W. Harrison, E. Donaldson, F. R. Murray, J. M. Wainwright, Jos. B. Smith, and M. P. Jones; Surgeon, D. Harlan; Purser, A. Welch; Marine officer, Capt. A. G. Taylor; Passed Assistant-surgeon, J. F. Harrison; Master, J. W. Dunnington; Assistant-Surgeon, E. R. Denby; Chief-Engineer, W. H. Shock; First Assistant-Engineers, A. C. Stimers, J. M. Adams; Second Assistant do., A. Broadnix, C. H. Loring; Third Assistant do., F. A. Canfield, H. B. Nones, R. M. Bartleman; Boatswain, J. Walker; Gunner, R. N. Peake; Carpenter, J. Dibble; Sailmaker, L. Rodgers.

Navy Yard, Washington.—The steamer Minnesota was launched on the 1st ultimo.

Navy Yard, Norfolk.—The new steamer Roanoke was launched on the 13th ultimo—for particulars, see article entitled "Launch of the U. S. Auxiliary Steamer Roanoke."

ICONOGRAPHIC CATALOGUE OF THE U. S. NAVAL LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

Part I.

SECTION III.

PERSONAL, DESCRIPTIVE AND MISCELLANEOUS HISTORY.

PERSONAL HISTORY.—*Biography.*

Æschylus, a Biographical Memoir of; with an Essay on the Grecian Drama. By the Rev. R. Potter.

Alexander the Great, the Life and Actions of. By Rev. J. Williams.

American Biography. By Thomas Wilson. 2 vols.

American Biography. By John Frost, LL. D.

American Naval Biography. By Isaac Bailey.

Bruce, James, the Life and Adventures of. By Sir Francis Head.

Bolivar, Simon, President of the Republic of Columbia, the Memoirs of, and his principal Generals. By Gen. H. L. V. Ducoudray Holstein.

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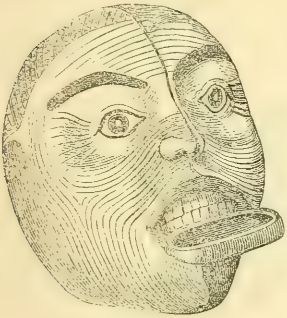

Fig. 11.

Figure 11. Representation f *tattooing* of the face of a tribe of Indians on the N. W. coast of America.

However hideous this horible scarification may appear to civilized people, it is nevertheless considered by the heathen nations who practice it, that essential part of their costume which will ever serve to mark the tribe to which each individual belongs. Friends and enemies are alike known by their marks. A uniform so conspicuous and so durable is not unfrequently the *bone* of a life-long contest, wherever the lot is cast; and the scars thus obtained according to the custom of the clan, are honored even with more pride than those obtained in its service. Males are considered boys until they have been tattooed, and it is on them that it is fully practiced, usually before they are eighteen; the females are but little marked, on their hands and bodies, and some tribes confine the practice wholly to the males.

The skill necessary to perform the operation of tattooing, can only be attained by much practice. The instruments used are made of bone, which, with their finest edge, require a blow to make them penetrate sufficiently, and coloring matter obtained usually from nuts—different tribes generally having different shades. Persons who practice it usually do nothing else, and get well paid for their services.

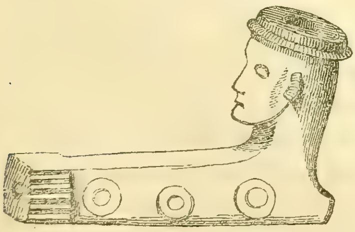

Fig. 12.

Figure 12. A *pipe* made out of slate stone, by the celebrated Indian Chief, Black Hawk. The value of this consists in its maker, for it is far inferior in point of workmanship to many others in the collection, but it will serve to raise the inquiry—who was Black Hawk? when the present generation has passed away; and when, alas, all the descendants of Black Hawk's nation, may have passed away too.

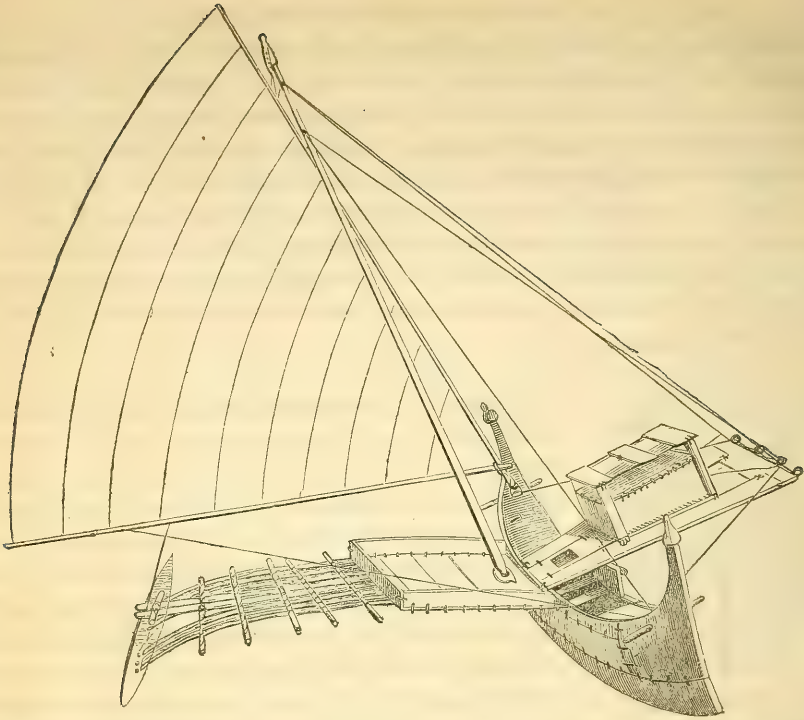

Fig. 13.

Figure 13. The Flying Proa, from the Ladrone Islands. These canoes are managed with great dexterity, and move through the water at a surprisingly rapid rate. Their peculiar construction is such, that in using the sail, which is not adapted to reduction on increase of wind, an *out-rigger* is essential to their safety in tacking, but in going alternately to leeward and windward, it can of course add to safety in but one direction; consequently, there is provided a counterpart by the projecting boom on the opposite side, which is secured to the top of the mast, and when the wind blows fresh some of the crew go out on this, so as to balance the force of the wind, and in this way keep trim boat.

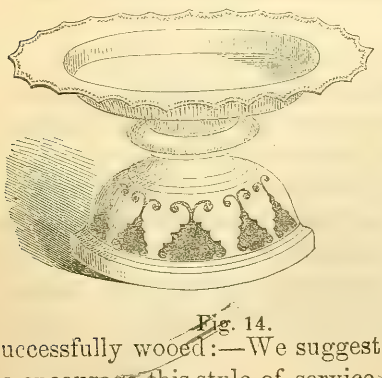

Fig. 14.

Figure 14. A Siamese Salver, made of bronze. This we have no further history of, but it is no mean piece of workmanship from a land of which we know so little. It serves us to the recollection of having somewhere read of a gigantic image of Buddha, one hundred and twenty feet long, reclining in a meditative posture that has set the fashion in Siam for the attitude in which wisdom may be most successfully wooed:—We suggest whether the same attitude would not tend to encourage this style of service.

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SHIP-BUILDING NOT YET A SCIENCE.

In regarding ship-building as a science, how seldom do we find a man who really does recognise its principles in the construction of vessels, and again how very few there are who exhibit those principles, either in reference to the model or details of construction, by which they give evidence of their belief of their own assertions, when speaking of the science of ship-building.

The blundering process manifest in every department of ship-building, audibly admonishes us, that science in marine construction exists only in name. Indeed, so far have these mal-practices extended, that the very elements of nature are of necessity constrained to repel the absurd conclusions to which Nautical Mechanism sometimes arrive under the garb of Philosophy,—nor is the incongruity less manifest in the form of the fabric than in the details of its construction. The model of the vessel is often as much the offspring of a hereditary compound of crude notions, as indelibly engraven in the form of the fabric, as the features of the human face are traceable from the father to his son. How rarely do we find that the laws of nature have been consulted, in reference to the conditions upon which the burdens of commerce may best be conveyed upon the lubric wave? How few there are who study the radiating forces consequent upon the equilibrium of fluids, as a means of acquiring the best shape to the vessel about to be built, and of securing the greatest amount of capacity, strength and comfort, with the least amount of bulk, weight and absolute resistance? How very few there are who do not cling with tenacity to dimensions as the means, rather than the end? How much more important it is that a ship should pass through the *custom-house* with a small registered tonnage, than that she should pass through the water with a small amount of disturbance? In the construction

of vessels, how many suppose that the strength of the ship is in the ratio of the number of cubic feet of timber in her frame, and tons of iron in her hull? *and how often are they insured on this basis?* How often does the public voice set down a shipwreck as the result of, and being consequent upon, the dangers of the sea, while the model of the vessel makes it but too manifest, that it was owing to the "*dangers*" of the "*ship?*" How often do we find, after the ship is built and launched, that the keel should have been on the side, instead of on the bottom, inasmuch as the side tenders the service which the bottom repudiates? How often do we find that the vessel we have spent months in constructing, when committed to her element, draws two or three feet more water than we intended?—Of how much more consequence, in a word, is the rule of *thumb* than the *rule* of *three*? What use is made of calculations beside those required to determine the estimated price for building? How much more is left to the eye in the construction of a vessel as well as in modelling, than should be? These are questions which all those who so enthusiastically speak about perfection, and perfected art in ship-building, should ask themselves. We think we hazard nothing in announcing the *science* of ship-building as very generally practised, both in this country and in Europe, to have more significance in name than in fact. Nor have those who, from a series of *rules of thumb*, systematized a series of curves from models which would never have been built by a second time been more successful. We often hear persons who speak and write of the science of ship-building, and sometimes claim that it has attained an altitude "*beyond*" which it can hardly go. We have no doubt that there are merchants, engineers, and even ship-builders who think so, but we are not of the number; and if we could now be persuaded that the people of the United States, the most favored on the globe, in their advancements in maritime progress, were even on the high road to perfected science in ship-building, we would drop the pen, and mount the progressive car, in the full expectation of being carried to the zenith of knowledge in nautical mechanism, by the momentum of present attainments; but how different do we find the gradations of wisdom in this glorious art, from what the world assumes them to be? What the world calls science in ship-building requires but to be analyzed, when it will be found to be a bundle of prejudices,--every mechanic, merchant, ship-master and nautical engineer, assumes himself to be of some importance, and that if he were to retain to himself his amount of knowledge and experience, the measure never could be filled; he wraps himself up in his wisdom, as he would in his cloak, and levies a tax of some kind, on all who approach him, for the immeasurable amount of knowledge he imparts. Now we propose to open a few of those budgets, that the world may see how little is known, and how much there remains to be learned. Science, in its strictest sense, is but the development of truth, and whether applied to agriculture or to architecture, to the developments of the mind, or

to the anatomy of the body of man, produces a miniature creation, and alike demonstrates the correctness of that maxim, which teaches that *there is nothing beautiful which is not true.* Beauty is as inseparably connected with truth in this science as in any other, in the model of vessels as in the finest arts, in nautical mechanism as in the lineaments of the human face; but the task of awarding the palm of victory to the largest development of science, belongs not to the man, who with a single half-developed idea, inherited from his progenitors, and which can never be tested, because of its having no affinity with the law of nature's code, either in its formation, or abstracted connection with the principles of science. Beauty, whether in feature or in form, is not an element capable of being abstracted, so as to become a distinct object to the mind of the artist, who reproduces natural objects, much less to the creative genius embodied in nautical formation, or to the imagiation of the student in nautical science, who, having no other copy than the laws by which the elements are governed, is, and must, of necessity be an original thinker, *and may be an old master though yet a minor.* In reference to nautical science as developed in the model of the ship, beauty is not to be found within the limits of the understanding; it takes in the entire orbit of harmonious proportions in God's universe, which great whole the understanding cannot embrace. Beauty and truth have an inseparable relation to all pleasing and lovely objects; and a well-proportioned model, like the well-formed features of the human face, holds within itself the excellencies of all art, and is a miniature of creative genius. The great artist labors to produce the beautiful, with the deep conviction that it can only be done through the channels of truth—he must first seek the true at the shrine of nature, and the good and the beautiful will accompany his labors, if faithful in the object of his pursuit. The light of truth illumines the halls of science, and vainly does *he* seek the beautiful who seeks not truth. The far-seeing student of science looks not on the surface of things; the eye of genius penetrates her innermost depths, his listening ear catches the harmonious sounds of nature, as they gush in musical tones from her great expanding soul, and guided by the light of truth, the pulsations of nature's heart vibrate as with the anatomy of life, and with his thoughts and feelings thus guided, he extracts beauty from every visible object of nature, and adapts his models to the elements he navigates, whether it be the turnpike or railroad, the telegraph-wire, mid-air, or the denser fluid, mid-ocean. If it be an aphorism that there is nothing beautiful that is not true, how hideous must those heterogeneous forms appear to men of science, which are presented in the great mass of vessels which are now built, and are daily being launched upon the highways of commerce, while thousands are exulting in the belief, that nautical science is fast approaching perfection, and alas, too many of these are ship-builders. How often has the reformer in marine construction been regarded as an addle-pated enthusiast; and for making manifest those glaring

discrepancies, how often is he regarded as was a certain apostle, before a king called Agrippa, but with a sufficient amount of honesty (of course) to attribute the effect to a different cause.

We ask any and every intelligent mind, capable of grasping a single idea, to give the subject of perfected science in nautical mechanism one hour's reflection, and we challenge that individual to come to a different conclusion, from that which we assert, which is, *that ship-building, as a science, is but in its infancy.* And now for the proof or the ground-work of our hypothesis. It is a fact which cannot be denied, that the science of displacing water is inseparably connected with the form of vessels; this being admitted, it follows as a sequence, that the best forms are those which, with a given displacement and power, will remove the water farthest in a given time; on these two propositions hang the immutable laws of the universe. These being admitted, we are led to inquire whether it is easier to displace 1000 tons of water, in one vessel whose centre of gravity of displacement is 12 feet below the surface or line of flotation, than in another vessel having the centre of gravity of displacement but 8 feet below the line of flotation? We are content to hang our claim (not only to a reputation in nautical science, but) to the ordinary allotment of *common sense,* upon the solution of this problem. If the question propounded shall be answered, in favor of lighter draught of water, then the question of science in ship architecture, as at present developed, is *all moon-shine*, and ship-building, as it regards form, is yet, indeed, in an infantile state. But why is it (we are sometimes asked) that we hear so much about improvements in ship-building? We answer, that the builder is quite willing to induce others to believe that which he himself believes, viz., that he has improved upon his last model, it fills his eye better than the last model did.

The owner, too, is equally ambitious to announce the introduction of some new idea which he has produced, in increasing the carrying capacity of the vessel by a few inches more depth, unmindful that his vessel is actually smaller instead of larger, inasmuch as the increased weight of vessel must be carried on the same bottom, and that any increase of depth of vessel beyond a just proportion, makes the vessel smaller instead of larger. We mean by this expression that she will carry less instead of more on the same bottom; hence we say, that if the merchant wants a carrying vessel, he should make her wide, and by so doing he brings the centre of gravity higher, which will enable his vessel to sail faster, labor less, cost less, and carry more. In order that this principle may be more readily understood, we will assume that the holds of two vessels are filled with water, each containing 2,000 tons, or 70,000 cubic feet; one has a depth of 26 feet, the other 17 feet, with an increased breadth to make up the difference. We ask who would long hesitate, in determining which vessel would require the most labor to discharge the water from her hold? The increased labor required to discharge the

deep vessel, is a fair exponent of their increased resistance consequent upon an attainment of the same speed.

The displacement of water by a moving vessel, is but the process of raising it around and above the proper line of flotation; and the question resolves itself into this, is it easier, or does it require less power to raise it 5 feet than it does 6 feet, or 10 feet than it does 12 feet—the process of displacing water is in effect the same as pumping it out of a place just ahead of the vessel, and discharging the water pumped up into the cavity in which she now rests. The problem resolves itself into this, at what part of the line of flotation does the water most oppose our progress—at the bow, the stern, or the sides? Perhaps we shall not be compelled to pause long for a reply, and the answer will most likely be, at the bow. Why should the bow repudiate the passage of the water, and heap up the fluid before the vessel reaches it? or, in other words, we ask, why, then, make the bow the fullest end of the vessel? Some one may say, for want of a better answer, that the stern is made the sharpest, in order that the vessel may steer well. We, in reply to this, inform the interrogator, that all experience proves, that those vessels are most sensitive to the motions of the rudder, which have the finest formed lines on the bow. We inquire again—why does the water rise higher at the bow and lower at the sides, when the vessel is in motion than when at rest, or when not under the influence of propulsory power? Is it not because the free passage of the water is obstructed at the bow, and is taken from the sides in sufficient quantity to equilibriate or balance the augmented wave of disturbance, which precedes the bow of most vessels? We use the term balanced, because the vessel and all on board is always balanced, when afloat, by the weight of water (of the same specific gravity as that in which she floats) required to fill the cavity made by the vessel. If it be true, as we have said, that displacing water by a moving vessel is but the process of pumping, or raising the bulk of water displaced by the vessel, up to the surface in a given time, by propulsory power, how little have we learned by our boasted experience in modelling vessels, and how much less knowledge is often manifested, even where the boasted attainments of science embellish our reputation? It is true, it may accord with the *customs of the service*, for a chief naval constructor to denounce private ship-builders as merely *axe* and *adze carpenters*; but when we compare the science developed in the design of our vessels of war, with that of our merchant ships, history reverses the order of things, and hurls back the charge in defiance at the man who prefered it. But the causes of deformity in vessels has been charged to the tonnage laws. It is true that in the construction of merchant vessels, the tonnage laws have been a great obstruction to improvements; but this is not true in reference to naval vessels. If ship-builders had been true to the interests of humanity and science, *the tonnage laws* would never have stood as a foul blot upon the commercial fame

of America until this late date, as the immediate cause of shipwreck and dismay, dismembering the family circle, and dispensing death and disaster in its wake. A false impression has been made by ship-builders—the world has been led to believe that we are on the high road to perfected science in ship-building; this is a monstrous absurdity, and deserves reproval at the hands of every philanthropist and man of science on the globe. The long and fearful list of shipwrecks, which are directly traceable to deformity in shape, far exceed that of any other cause. Blot from the archives of commercial law every vestige of taxation on commerce, and in less than a quarter of a century, the man who would propose the conveyance of ballast, as a measure of safety to vessels, would be set down as a *madman* or a *presumptuous ignoramus.* Let us not talk of the developments of science in ship-building, while the topsides of two vessels are placed upon the bottom of one, and then to avoid the consequences, an equal amount of weight in pig iron or paving stones, are placed in the hold to equilibriate the unnatural burden. We laugh at the folly of the man who, on his way from mill, places a stone in one end of his half-filled bag of meal, to balance the one-sided load astride the back of his mule; but we do that which is infinitely worse; we carry the stone in the bag *to, as well as from the mill*, and not unfrequently shut out more than one-third of the cargo, due the displacement of our vessel. The science of nature lies in the possibility of making the fabric appear smaller than it really is; but the practice of ship-builders makes the small vessel appear larger than she really is, and consequently unprofitable, because overburdened with herself.

It is not a matter of conjecture with us; we know that everything in the universe is made in accordance with a system of proportions, from the greatest object to the smallest atom—from the strongest to the weakest; and every intelligent mind rests in the belief of this immutable law of nature, and understands that there is an immediate connection and relation between the laws of proportion and those of eternal truth. All that is demonstrated in mathematics, and in any other science whatever, is eternal and immutable, since the effect of demonstration is to show that it cannot be otherwise than as it is demonstrated to be.

The principles of beauty are equally definable and are equally affiliated to the laws of utility, as well as to those of proportion. Away, then, with the idea of beauty in the absence of proportion. Why not build the vessel first, and then determine which would be the best side to use for the bottom afterwards, and when it has been found which side of the fabric tends downward, place a keel upon that side and call it the bottom? However ridiculous such a course might appear to be, we assure our readers that it is quite as much in accordance with the principles of science as those often practised at the present time both in England and the United States, the most commercial nations on the globe. Alas! we are slaves to the opinions

of others, having no well founded opinions of our own. The empire of opinion, in relation to the form and qualities of vessels, is the largest in the mechanical and civilized world. From the veriest blockhead that ever degraded the human form to the philosopher whose cultivated mind grasps the definable laws of every science—all have an opinion, the shadows of which are pencilled on the mind of every man, and whether diluted into expressible thoughts, or becoming solidified in their adherence to the chambers of the soul, they tint and color every imagination and expression, whether of the eye or lip, which has the least connection with nautical mechanism; hence they become unconsciously a hereditary disability. To demonstrate the absence of science in ship-building, we have but to refer to the history of marine construction for the last half century, and we are furnished with a list of deaths and disasters, which, under the circumstances of malconstruction and deformity in shape, is quite sufficient to distil tears of liquid anguish from the sympathies of every generous heart. We will not ask the reader to make an Atlantic voyage in order that we may demonstrate our hypothesis; we only ask him to take up a position where he can witness the operations in steam navigation since its induction on the noble Hudson. Contrast the science displayed in the construction of the *Clermont* with that exhibited in the construction of the *New World*, the former cut in two lengthwise and widened in the middle, the latter widened on the sides Witness the construction of steamboats, and with no index or indication of error until the vessel is completed and her trial takes place, when it is discovered that she is too full forward, or too lean aft, is too unstable, or draws too much water, the engine or boilers are in the wrong place; and now for a piece on the bow, which, on a second trial, proves to be too much, and now for a piece on the stern to equilibriate the bow; perhaps this may end the farce, and the boat is now deemed fit for use. But in some cases the commencement was made at the centre, and after putting in a piece there, then the bow and stern received attention in the same way; and yet this blundering course is denominated the best means of acquiring scientific knowledge. And from such models rules are made, which we are taught to believe is the *vade mecum* to perfected science. But if all this takes place under our own observation, on one short river, where the builder, the engineer, the owner and the master can all watch and correct the errors, what must it be beyond our observation, on the ocean, where none can see by contrast, or hear the drowning cries of the dying, against these *blunders on the deep*.

But we may be told that ship-building is of antiquity, and is much more advanced towards perfection. We say *no;* knowledge is not commensurate with experience, nor experience with age. There has been but little real science in ship-building since the days of Noah. And we say further, that the example we have cited in the construction of steamboats is not an extreme

case. It should be remembered that the vessels on the Hudson are not surpassed on the globe, if, indeed, their equal can be found. Steamboats, it may be said, are the exception, and *steamships* are very near the mark. By no means; do we not log their sides and lengthen them in the same way that we do our river boats? Have not some of our ocean steamers ended their voyage on their side instead of what was improperly called their bottom? and would not more than three fourths of our sailing ships do the same thing, were it not for the ballast they carry? But does all this disability belong only to the United States? We say no—England is in many respects even worse. Look at her navy; one half of her ships are a mere *scare crow.* Her ships of the line are inefficient, as the war has fully proved. The war must be carried on where they cannot go. The heavy draught of water principle disqualifies her whole navy, as well as our own, and she has been compelled, during this present war, to build an entire new navy of fighting vessels, while the old navy is used as tenders—74*'s to be tenders on gun-boats!* What a farce! and these gun-boats are without any defined shape in symmetrical proportions, clumsy, sluggish, unsightly things. But why is it that in everything else the progressive march of science is discernible, while in ship-building we grope our way by the glimmering taper of experience? We say that it is because the light of science developed in nature's laws has never been extracted by the press; and it is indeed strange that history should furnish no instance but this, in which the light of literature and science should have adopted the press as the only legitimate means by which nautical mechanism may be raised from its low position as a compound of crude notions, to the altitude of a science, immutable in its laws, unapproachable in its grandeur, and unparallelled in utility.

GUN-POWDER.—The increased demand for saltpetre, sulphur and charcoal—the ingredients of gunpowder—have caused an advance in their respective markets of from 100 to 150 per cent. These circumstances have invited the attention of men of science to other explosive mediums, as a substitute for gun-powder, which, while equally efficacious, are less expensive. Gun-cotton and fulminating silver have been the subject of experiment. Why not try *steam*?—EDS.

REVISION OF THE STEAMBOAT LAW;

AMENDMENTS PROPOSED.

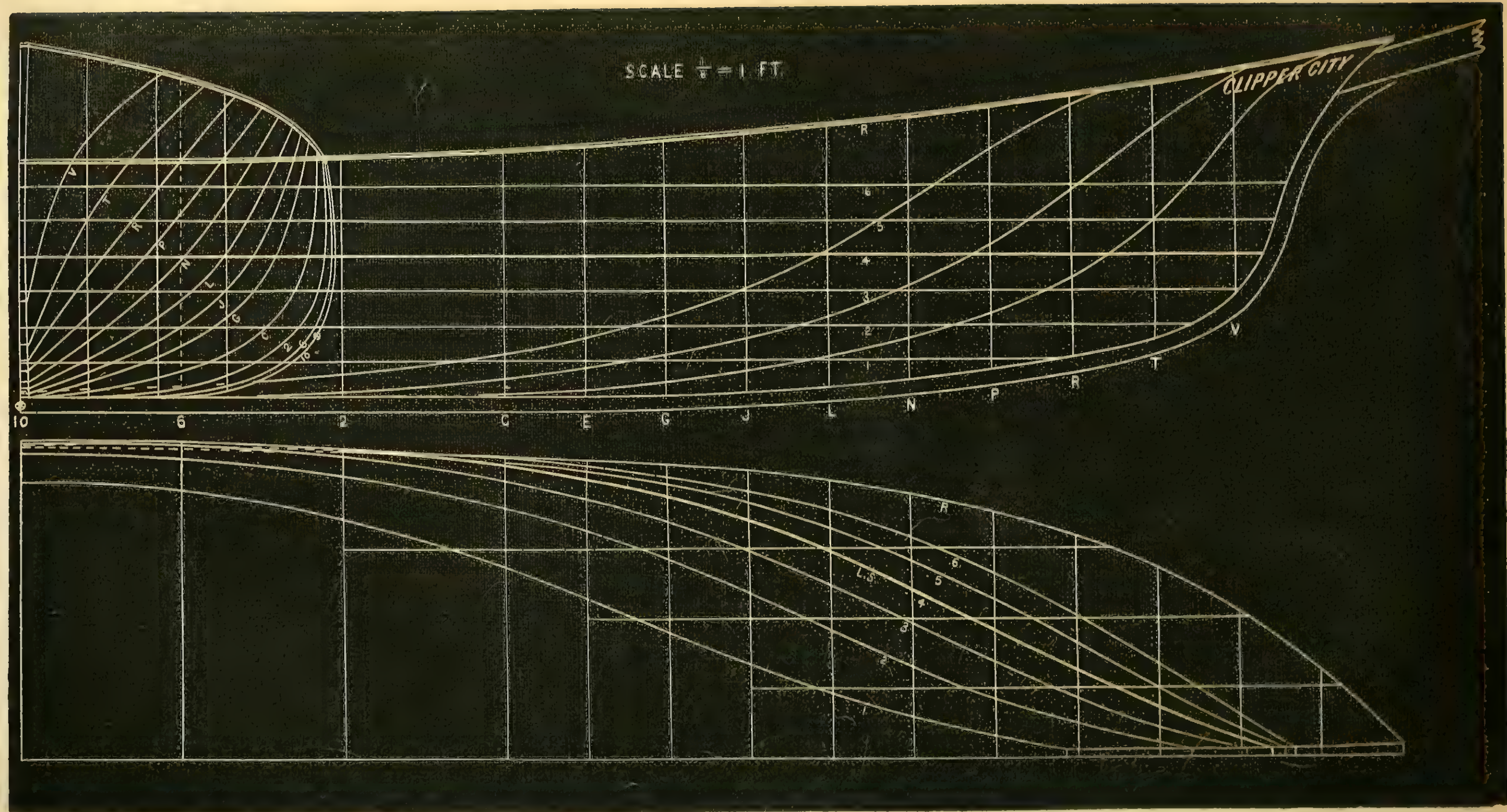
In the first volume of this Magazine we took occasion to analyze the Steamboat Law of 1852 and offer some amendments thereto, which appeared to us desirable to be made in order to bring the law within a creditable degree of perfection. It is abundantly apparent to mechanical observers that the law is very crude and imperfect regarding the composition and structure of hulls, as well as deficient in provisions regulating the engineering apparatus of steam vessels carrying passengers. The law, as it is, has been productive of most gratifying results, yet we are sure it has not been enforced in certain districts with all the strictness which the importance of passengers' safety demands in an age like the present, when it is only necessary to determine the safety of the travelling public, and the builders and engineers of our steam vessels stand qualified to respond to the resolution. If the Steamboat Law was as perfect as it ought and should be, and the inspectors neglected their whole duty in the premises, or if the law called for impossibilities at the hands of the ship-builders, engineers, and navigators of the United States, it would be folly for us to urge a greater degree of stringency in drawing the mark of quality, and securing the proper construction and outfit of passenger vessels; but neither of these suppositions are true.

To our mind the present law falls far short of its highest limit of usefulness; we feel it highly imperative, therefore, to call the attention of our legislators in Congress to the early revision of this Act.

As evidence of the short-comings of the Law touching adequate provisions for the safe construction of steam-vessels, we may cite the fact that steamship owners themselves, have so far adopted our published views regarding the importance of incorporating the life-boat principle into the construction of vessels designed for the transit of passengers, that, without exception, every steamship launched in New-York the past year has been provided with bulkheads dividing the engine-room from the other space of the hold. It is true they have not gone to the extent of our recommendation, and furnished the ship with an iron keelson, as a basis of longitudinal strength and ventilation, but the main principle of compartments has been adopted, and the bulkheads have been formed of wood, to which, in some cases, the necessary rigidity has been furnished by diagonal straps of iron. It will be seen that shipowners have in these instances gone a step in advance of the law, feeling conscious that any slighter degree of security would obviously fall below the expectations of the public, in view of the *Arctic* calamity.

It has been publicly conceded by able judges, that the life-boat principle of construction, in its fullest mechanical sense, furnishes the only reliable safeguard against some of the most appalling forms of danger known in navigation, whilst many important advantages may be simultaneously secured. This principle contemplates the division of the ship's hold into compartments by means of a deep iron keelson, in lieu of the wooden one, and uniting the extremities of the steamship or boat, and water-tight transverse bulkheads of the same material, one forward and the other abaft of the engine, thus furnishing three water-tight compartments in the hold. In addition to this, the ceiling of the hold should be securely rendered impervious to water, should an accident happen to the outside plank below water. The pumping force should be vastly increased, and rendered equally effective to quench fire. Such vessels should also be fitted with lightning conductors and be perfectly ventilated. We do not hesitate to assert that more mortality is caused every year in the United States by the want of ventilation on steam-vessels than happens in consequence of accidents on board. There is an attempt made at ventilation, it is true, in many instances, but it is always insufficient. As a ventilator, there can be nothing better than the iron keelson, built hollow, and extending as a pointer to the upper deck at each end of the vessel. When in progress, a strong current of wind would pass through the keelson, which should be open over the timbers, and a free communication be established between the keelson and the usual opening in the planksheer. Without draft there can be no circulation, and ventilation means circulation. The durability of ships might be doubled by a practical system of ventilation, but such we have not yet found adopted.

We have not space to reprint what we have already urged regarding the means of increasing the present security of passenger life on ship-board; the readers of the NAUTICAL MAGAZINE must be already familiar with our thoughts on this topic. But we would respectfully desire to enlist the attention of Congress to this subject, and, if called upon, are prepared to suggest many improvements regarding the construction and fitting of the hulls of steam-vessels, within the peculiar province of the marine architect to point out, which should pass into amendments of our Steamboat Law, in order to make it available to the wants of the age. If any good reason can be shown why this statute requires no improvement to free it from manifest imperfection and deficiency in its provisions for the protection of life and property, we have nothing to contend for; but in the absence of such, we do most respectfully insist that the law should be amended, to the extent of our present knowledge.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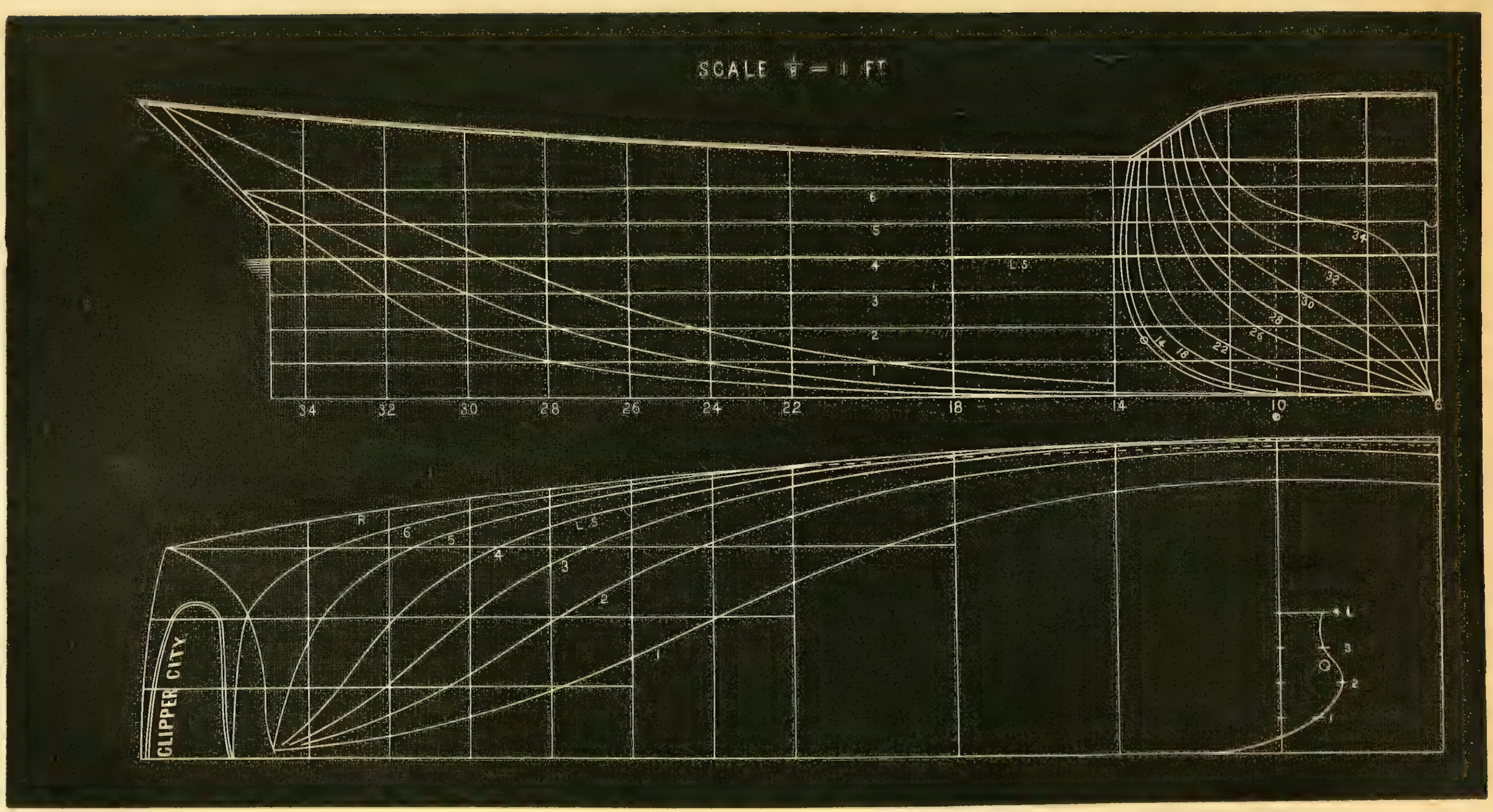
CLIPPER CITY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CLIPPER CITY

ON LOCATING THE CENTRE OF PROPULSION,

WITH THE SAIL AND BODY DRAFTS OF THE SCHOONER "CLIPPER CITY."

THE object of this article is to furnish an account of the particulars relating to the *model*, rig, and performances of the schooner "*Clipper City*," built at Manitowoc, Wisconsin, by S. Bates & Son, in 1854. The model of this vessel was made by the writer,* and was designed for a light draught, fast sailing lumber vessel on the fresh waters of Lake Michigan. The dimensions are as follows:—

Length on deck for tonnage	100.92 feet.
Length on mean load-line	97.33 "
Moulded breadth at dead-flat frame	27.12 "
Extreme " " " "	27.72 "
Depth of hold for tonnage	7.58 "
Register tonnage	185 tons.

Cargo of lumber from 100 to 110 thousand feet.
Draught of water, from 7 to 7½ feet.

This vessel was built for Platt & Bro. of Manitowoc, and was first sailed by Capt. R. L. Bell, a master as well qualified to try her bottom as the best to be found—a circumstance not always attending the first voyages of an *experimental* vessel, and therefore to be appreciated by all who are interested in progressive art.

The model of the *Clipper City*, aside from the legitimate objects of its design, was intended to test the utility of furnishing vessels with a large degree of what may be denominated "*lifting power*" on the bow, by modeling it so as to present a more acute lifting angle to the fluid than is usually given, especially to vessels designed to sail on an *even* draught of water. An inspection of the draught is sufficient to show that this quality is possessed in a remarkable degree. In sailing, it is found impossible to "*bury*" her bow at a speed of *eighteen* miles an hour, and the resistance which is offered in sailing, to longitudinal oscillations, or pitching, is the greatest we have ever found. The resistance encountered on the bow in sailing, being distributed not only along its sides, but under its *bottom*, acts powerfully to restore the horizontal equilibrium of the vessel when disturbed by the action of the sea, or the unsteady depressing leverage of the sails. Owing to her great breadth and *shape*, she is exceedingly stable, "standing up," and carrying all her canvas when other vessels are obliged to reef, and may be said scarcely to roll at all in any, except extraordinary weather. To appreciate the advantages of "beam" in connection with good shape, for sea-going excellence, it would be well for the advocates of deep and narrow vessels to learn experi-

* W. W. Bates.

mentally the sea-going qualifications of vessels such as we are now describing.

The model of the "Clipper City" is unique, and the lines may appear singular to those who fear to venture out of the beaten path. Nevertheless, there is not a more successful vessel, in the fullest sense of the term, engaged in her trade in the west. The dead-flat frame, which has 4½ inches dead-rise, is located 5 feet 3 inches *abaft* the middle of load-line; the centre of gravity of load-line displacement, or centre of buoyancy, is found 3 feet 5 inches abaft the same point, while the centre of *lateral resistance,* which in the hull would be found five feet aft of the middle of length, is brought forward by the use of the centre-board to a point varying from 2½ to 3½ feet *forward* of this locality. The centre of propulsion is placed 3 feet 7 inches forward of the middle of load-line, being 7 feet forward of the centre of buoyancy, and about over that of lateral resistance. With fair trimming of sails and dropping the centre-board, as in the sheer plan, a very slight weather-helm is carried in ordinary weather. With light winds an inclination to lee helm is experienced, showing that when light, either the sail is too far forward, or the centre-board too far aft; in consequence, she is generally sailed near one foot by the head, when without cargo, to increase the resistance to lee way on the anterior extremity. *We* would prefer to add another cloth to the breadth of the main sail to deviating from the proper trim, were any alteration to be made, to remove this slight discrepancy. The problem was not one of the common description, to properly adjust the centre of effort of sail, as well as to locate the centre-board in the right position, in such a model, and recourse was had to the advice and services of Mr. John W. Griffiths, of New-York, who, with the model before him, made calculations, and drew the spar draft. The following letter embodied the result of his labors:—

Oct. 26*th,* 1853.

"My Dear Sir,—I herewith transmit the drawing of spars, with the calculations of your schooner. You may be surprised to find the centre-board so far forward; the necessity for it appears to me rather strange, but you will observe that she has an enormous amount of lifting power, and that in order to apply the propulsory power to advantage, I have placed it forward of the middle of load-line 3.55 feet. The rig is that of a topsail schooner without square sail. If you should have any doubts about the propriety of placing the board so far forward, and should think proper to shift it aft, it would be well to move the stations of the masts also. I should, however, venture to build the vessel in accordance with the results here set forth:

"Centre of foremast from forward perpendicular of load-line, =24.25 feet. Main from aft perpendicular, 34.6 feet. Foremast, 73 feet 4 inches. Head,

10 feet 6 inches. Foreyard, 48 feet 6 inches, each arm 3 feet. Topmast, 24 feet 6 inches + 13 feet 8 inches + 6 feet 10 inches. Topsailyard, 36 feet 7 inches, each arm 3 feet. Topgallant yard, 27 feet 4 inches, each arm 2 feet. Foregaff, 28 feet. Pole, 2 feet 9 inches. Boom, 36 feet.

"Mainmast, 81 feet 6 inches. Head, 11 feet 8 inches. Main-top-mast, 40 feet 9 inches, add pole, 8 feet. Gaff, 32 feet; pole, 5 feet 4 inches; boom, 48 feet 6 inches; pole, 4 feet. Bowsprit outboard, 12 feet. Jibboom outside of bowsprit, 12 feet + 8 feet + 4 feet.

" *Centre-board.*—Forward bulkhead, 17 feet 8 inches forward of middle of load-line—20 feet long. I would recommend that a few feet be added to the after end, which need not come through the deck, something like "the *Victorine*" in my book ;* 3 or 4 feet would be an abundance. In case you do so, it would be well to allow the masts to remain, inasmuch as the centre of propulsion and the centre of the board will then be nearly in vertical line—now the centre of the board comes nearly in line with the centre of foresail.

"CALCULATIONS.

"Area of leading sails 5,732 square feet.

Centre of effort forward of middle of L. W. L., ... 3.55 feet.

Centre of effort above load-line .... 35.39 "

Vertical moment of sails, 214317 = 2.36 × stability.

Displacement on the timbers, 8556.3 cubic feet = 0.54 × L. B. H.

Centre of displacement aft of middle of load-line, = 3.45 feet.

Centre of displacement below load-line, = 2.46 feet.

Area of load-line 1937.2 square feet = 0.73 × L. B.

Centre of load water plane, aft of middle of L. L., 3.2 feet.

Moment of stability, 90184.

Meta Centre above centre of buoyancy, 10.62 feet (very high.)

Carrying capacity, in gross tons, (estimated) 145 tons.

"In haste, yours very truly,

"JOHN W. GRIFFITHS

"To W. W. BATES, Esq.,

"Manitowoc, Wis."

The only changes from the above results, as seen in the drawing of rig, introduced in the construction of the vessel, consisted in moving the forward bulkhead of the centre-board 3 feet farther aft, and in adding 4 feet more to its length—making it 24 feet long, and 9 feet wide. The reason for this change was partially involved in the fact, that on the lakes it is customary to drop the board considerably farther than represented in Mr. Griffiths' drawing, and consequently, if placed where he assigned it, its centre of lateral effort would be "dropped" too far forward for his calculation, when so used. It was lengthened to furnish a greater proportion of lateral resistance, as seemed to be demanded by the globular configuration of the

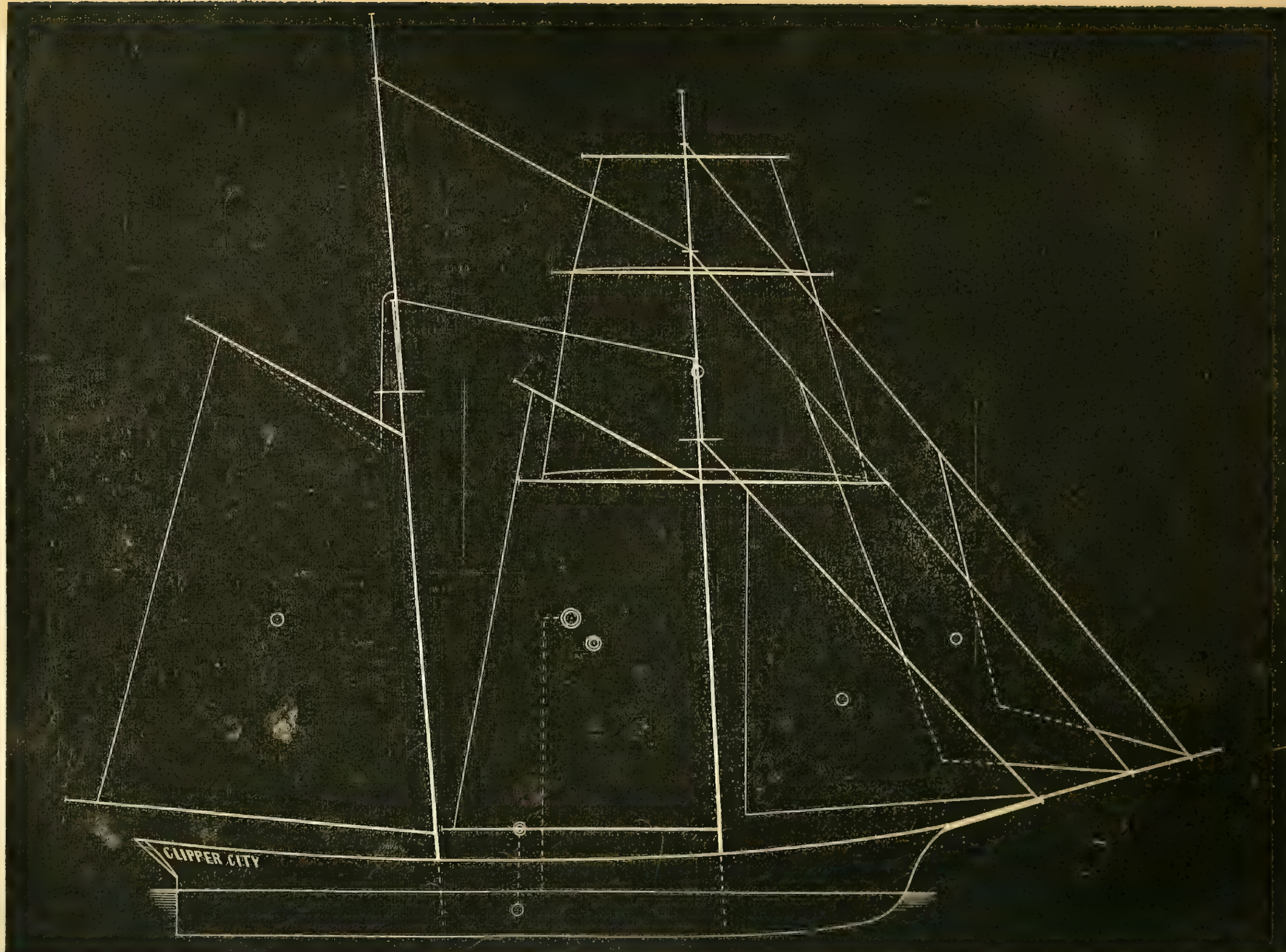
* "Marine and Naval Architecture."

midship body. These changes, it will be observed, by referring to the drawing of sheer plan, did not bring the "centre of centre-board" abaft of the centre of sail, as suggested by Mr. Griffiths, but fixed it at about this point when fully dropped. The reason of this will be obvious, when it is seen that the centre of the *fulcrum* of the board represents its centre of lateral effort. The stations of the masts were not moved, nor was any alteration whatever made in the spars. The vessel, however, was built *six inches* deeper than she was modelled, which, of course, added to her weight and capacity; and the mean load-line, originally assumed at 83 per cent. of the height of gunwale above base-line, then became too low to answer for an index to displacement, and the relative proportion of sail also became in effect reduced. The "Clipper City" has, therefore, only a moderate allowance of propelling power, and were her model also a "moderate" one, we should expect performances of the same complexion only.

The cabin of this vessel was furnished by the writer with a SCALE OF DISPLACEMENT, showing the weight of cargo on board at any line of immersion, and was doubtless the first one of the kind ever made, and put on board of a vessel in the waters of America. This vessel weighed 121½ tons when completely equipped and ready for cargo; one hundred and sixty-five tons, gross, is a fair load, and by deeply lading she will carry her "register" tonnage. This she would not do, however, were she entirely constructed of oak. The top timbers, stanchions, (which are bolted on every frame,—21 inches apart,) bilge strakes, centre-board trunks, clamps, deck frame and knees, are of hackmatack. This wood, in its green state, when the scantling is enlarged to furnish an amount of strength equal to oak for a given purpose, weighs about 21 per cent. less than the oak—strength for strength—and loses only about *two pounds* of water per cubic foot in seasoning—hence, its advantages for ship timber over oak, especially when used in a green state. Its durability and capacity for the reception of fastening, are beyond question. We have heard of one or two vessels having been built near Lake Erie principally of this timber.

In selecting the dimensions of this vessel, the length was fixed with reference to stowing four lengths of lumber between bulkheads. The cabin is built under a quarter-deck at the height of main rail, and occupies but 14 feet forward from the sternpost. Three-fifths of cargo is carried upon deck. She has six hanging-knees on each side under the beams; the sides of the centre-board trunk are seven inches thick, and the board itself, six inches. She is built and fastened in the very best manner.

The following are a few of the best runs of the schooner "Clipper City:" from Sheboygan to Manitowoc, 25 miles in *eighty* minutes, with leading sails set and strong wind aft, equal to 18¾ miles per hour; heavy lake sea running, and with not more than five tons of freight in the hold. In a run like this her enormous lifting power and great breadth was displayed to


CLIPPER CITY

advantage. Again, from Chicago to Port Washington, 115 miles, she sailed in seven and a half hours, averaging the rate of $15\frac{1}{3}$ miles per hour —wind fair and hold empty. She frequently works up or beats to Chicago, from Manitowoc, distance about 165 miles, in about thirty-six hours, loaded with lumber. She has run up with a fair wind, deeply loaded, in sixteen hours, and made the run back, light, in fifteen hours, several times. But perhaps her best run was made from Chicago to Milwaukie, distance ninety miles, in *five* hours, equal to eighteen miles an hour on the average—a part of the time she must have reached the almost incredible rate of *twenty* miles per hour. At this time, she was commanded by Capt. J. Edwards, of Manitowoc. We have no hesitation in expressing our belief that a model with the same amount of resistance, but having considerably less lifting power and stability, could not be made to perform so well by the power of canvas. But it must not be supposed that her bow was quite sustained under such immense pressure of sail; she was often smothered to the rail forward in the foaming furrow which she ploughed so fiercely. We incline to the opinion that the effort of propulsion might be improved in location by being removed at least two feet farther aft.

To conclude, we believe the principle for adjusting the model to propulsion, and the latter to the former, lies in this: to place the centre of propelling power, whether sail or steam, in vertical line *above the centre of buoyancy*, or centre of gravity of displacement, (where it is necessarily located above the same, as in side-wheel steamers or ships,) and furnish the bow of the vessel with a sufficient amount of lifting power, shown by easy section lines, to counteract the leverage of propulsion, and no more. By placing the centre of propulsion either forward or abaft the centre of buoyancy, it is plain to a mechanical mind, we excite a tendency to *pitch* beyond the influence due to the state of the sea, when sailing; and without lifting power commensurate with the leverage of propulsion, we must inevitably bury by the head, compelling us to reduce canvas when it is of most service. Lifting power varies with the trim of the ship; vessels naturally deficient require to trim by the stern. Vessels that incline to settle aft in sailing, should be trimmed more by the head, but sometimes cannot be, because they require to trim by the stern, in order to bring the centre of *lateral resistance* aft, to suit the centre of propulsion. It is therefore quite as necessary for the shipmaster to understand these things as for the builder, who models and locates the propelling power.

BATES.

THE MASTS AND SPARS OF THE CLIPPER SHIP LIGHTNING.

REMARKS ON SPARRING SHARP SHIPS.

In the number for December, page 189, we promised a few remarks in connection with the spar draft of the clipper ship *Lightning*, to show that the *model* was not at fault, whatever discrepancy might exist in the splendid performances of this vessel. Owing to the absence of one of the editors from the city, this article arrived too late for publication in the number for January, as we had calculated. Having given a draft of masts and spars in the preceding number, we will refer the reader to page 292, while we proceed to disclose the *calculations* of the rig, which we find as follows:—

Area of leading sails, *viz:* two jibs, two courses, spanker, three topsails, and three topgallant sails=17,838 square feet.

Centre of propulsion located 2.65 feet forward of mid-length on the load-line, and 4.89 feet forward of the centre of buoyancy, or centre of gravity of displacement. Altitude of the centre of propulsion, above load-water-line, fifteen (15) feet above base, equal to 60 feet. Vertical moment of sail, equal to 1,068,900; which is equal to the moment of *stability* (see page 188) multiplied by 1.37, (one, and thirty-seven hundredths,) showing that her surface of sail is only moderate when compared with the enlarged capacity for carrying it. We think very few ships, if any, have ever been built with so great stability for an equal cubical displacement; and we are sure that they are no less few, whose good judgment would have been contented to refrain from over-sparring a vessel of such prime qualities. Many a builder would have furnished her with a taunter rig, and thus sacrificed some of the finest elements of speedy voyages. Masts and spars, as well as canvas, when adjusted to the demands of utility, will be found capable of stowing a *reef*. We always have too many spars in a gale of wind, and seldom find a sufficiency in light breezes; hence the propriety of studding-sails and top-sails, with which we can double the area of canvas in a few hours. We seldom stop short of over-burdening our ships with spars, when we endeavor to spread a large area of canvas for leading sails, one half of which cannot be used when the winds list to our full desire.

In the aggregate, the "Lightning" is lightly sparred, for a ship of her class and dimensions. But, for some reason, it is found that she is hard on her forward spars; and having lost a fore-topmast on her first voyage, it was advised in Liverpool to essay an improvement on her fore-body, by filling it out with "vertical pieces of soft pine" spiked to the planks, in order to enlarge the displacement, and, as the *patchers* think, to ease her oscillations in a sea-way. Against such an *un*-mechanical alteration—such a mediocre expedient—a block of wood might cry out a protest. Should it happen that the spars remain firm at the end of the next voyage, and the ship makes

another short passage, which she is as likely to do as before, depending on the winds, &c., the designers of this alteration will doubtless claim the credit of an *improvement*—an improvement on a Yankee model—very gratifying to Uncle John, we suppose. But when his pine gets *water-soaked*, adding to the weight more than to the displacement, of all things to be avoided, the difficulty, which was to be cured, will then be aggravated, and he will have to dock her again and seek relief in removing his quack prescription.

With regard to the model of the "Lightning," there has never been a finer in the docks of Liverpool; and it would be strange, indeed, if, at this point in the experimental history of clipper-ship building—in an age, also, that has been characterized by more independent efforts at perfective art than ever known before it, nothing could ever be found on shipboard incapable of improvement, or a higher degree of skilful adjustment by a more rigid application of scientific principles. With equal truth, it may be said that those who would undertake to improve a machine, or a ship, should first be equal to the task of its original construction, and, moreover, be familiar with its science. The *calculations* of rig will show, that the location of the *centre of propulsion*, on board the "Lightning," is as near the true point as it will be found on most ships of her class, being nearly five feet forward of the centre of buoyancy.

The principles of applying propulsory power to bodies, should be familiar to every mechanic. The most economical expenditure of effort to move a floating body, be it by steam or atmosphere, will ever be found realized when applied in the direction of its centre of gravity. All effort otherwise directed, must needs be subject to the drawbacks of leverage and one-sided action. Why is it that a steam-tug applies her power to greatest advantage in "towing," when her bow is made fast *under the quarter* of a ship, rather than alongside? Obviously because she brings her effort nearer to the middle line, and in the direction of the centre of gravity of the ship; and could she be secured to the ship directly astern, the end would be still better attained. When the "tow" is placed astern, there is a considerable loss in current, set in motion by the propelling instruments, inasmuch as the tug has to contend with the adverse motion of the water from her own efforts. The same principle is involved when we apply the moving power of vessels *above* the centre of buoyancy; and, notwithstanding the crude theories of mathematicians and philosophers in Europe, who have supposed there must needs be a "proper height" for sail *above* the centre of gravity of the ship, our deference for the plainest principles of mechanics requires us to seek no farther for an exposition of the correct philosophy of locating propulsory power. The lower the centre of propulsion, the better the application; and the closer in coincidence longitudinally with the position of the centre of buoyancy the better, also, provided the model is what it should be, with respect to the distribution of displacement and resistance, both direct and

lateral. And these remarks are not only true, regarding the original design for sails, but during the subsequent navigation of the vessel, the commander should be guided by the same rules. We say, therefore, reduce the leverage of propulsion to its minimum limits, if a vessel be calculated for the finer performances of maritime skill. It is only when the resultant of resistance is determined too far forward, or when there is an excess of lifting power forward, when under sail, that the centre of propulsion should be assigned a position forward of the centre of buoyancy of the ship. The shape of the ship and the comparative distribution of displacement on the two ends, should be such as to preserve her from any deviation of trim under sail; and when this is the case, and the centre of lateral resistance predominates in favor of the posterior portion of the body, the centre of effort of sails will be found rightly located in a vertical line with the centre of gravity of displacement. Placing it forward of this point, under such circumstances, will increase the tendency to *pitching*, because the pressure of sail, owing to its vertical remove from the centre of buoyancy, is then brought to bear on the momenta of the fore-body, constantly maintaining an unequal and unbalanced condition of weights, between the fore and after bodies, which should be in equilibrio, in order to insure a minimum degree of pitching, under sail. In view of these facts, a better location of propulsion, in the case of the "Lightning," would, perhaps, be found near five feet further aft. This is with the view of reducing any undue tendency to pitch to a minimum; nevertheless, if she would then have a tendency to carry a strong weather helm, (without increasing the draught by the head,) or to settle by the stern, the adjustment could not be made without modifying those influences. In the former case, an addition to the depth of keel aft, and in the latter case, a slight trim by the head, with a lesser movement aft of propulsion, would have secured all that could be desired, in the location of this important point.

But perhaps an investigation of the stations of the masts would be instructive with a view to discover the cause, or pretext, if there really be no cause, for the extraordinary exercise of mechanical fogyism, which we have referred to in the history of this ship.

Masts are usually stationed according to the length taken "on deck," or at the load line; and there are almost as many rules as builders, and not unfrequently a builder varies his "rule" to suit a particular ship or his own ideas at the time. Principles are more than rules; and in this country, if not in Europe, every intelligent mechanic depends on his own application of them to secure the result which rule-followers would fear to seek, except by the stereotyped mode. It is with reference to the position of the centre of buoyancy, and to its distribution, that we would proceed in placing the masts of a vessel. We will, therefore, show the position of the masts of the *Lightning* and the packet ship *Aurora*, built in New-York, by Wm. H. Webb, in 1854, and 195 feet long on the load-line. (For our remarks on this fine ship, with a

lithograph, refer to page 124, vol. 2, No. 2.) It will be seen that the "Lightning" is 32 feet longer than the Aurora.

	Lightning.	Aurora.
Forward distance of foremast, from centre of buoyancy	68 ft.	59 ft.
Aft distance of mainmast, from centre of buoyancy	6 "	13 "
Aft distance of mizzenmast, from centre of buoyancy	72 "	66 "

The relative fineness of the ends of the "Lightning," furnishes the reason for curtailing the proportionate distances, of the stations of the fore and mainmasts, from the centre of buoyancy, whilst the apparent discrepancy between the relative proportionate stations of the foremast of the two vessels, is reconciled by the fact, that the yards on the foremast of the "Aurora" are of precisely the same length as those on the main, and hence the mast was placed a few feet further aft on account of this peculiarity. Considering, then, the *models* of the two vessels, we are not able to discover without the labor of a mathematical investigation, any striking difference in regard to the location of the fore and mizzenmasts, in this comparison. The mainmasts, however, do vary in the ratio of proximity to the centre of buoyancy, or even to the mid-length of load-line. Few ships are rigged with the mainmast stepped so near to the centre of gravity, an innovation upon custom from which we cannot withhold our approval. What then, it may be inquired, is wrong? If the model be right, and the centre of propulsion be approximately located at the proper point, and the stations of the masts be found within customary limits, what can be amiss, to require a bungling operation in Liverpool docks? Granting the fact to exist, that this ship has an extraordinary surplus of head spars, or that she requires an immense preponderance of head sail, in order to perform duly her evolutions, we will briefly indicate our remedy. If the first hypothesis be true, the plain remedy is to *reduce* them. If the second be true, or, in other words, if the ship seem to require a disproportionate amount of head sail in rough weather, it is plain that the lateral resistance, or we may say, the resultant of resistance, is determined too far forward, for which we would advise an addition to the *depth of keel aft*, and then to reduce the excess of sail found necessary forward at sea. Such a model should never be trimmed by the head, yet often is by erring ship-masters. Furnish the vessel with a preponderance of lateral resistance, either in keel or centre board, as the case may be, *abaft of the centre of buoyancy*, and then you may carry a minimum of sail on the sharp bow as the displacement demands. We should locate the centre of propulsion in a vertical line with the centre of buoyancy on board the "Lightning," and add keel enough aft, to enable her to carry it there under every circumstance.

The fact that any alteration in the form of a ship has been thought desirable by her master, or others, is far from conclusive with us that it is required. On the contrary, owners will often find another mode of procedure the

best to free a vessel from the charge of obnoxious qualities; and that is the discharge of the master and the employment of another, better qualified to command the particular combination of the qualities of the ship in question. The principle upon which we base this remark is of universal application among men and machinery. Seamanship and engineering are only different names applied to different pursuits, which have alike their foundation in natural mechanical principles; and without depreciating the qualifications of a mariner or machinist, we may still prefer one of two first class men for one particular branch of a pursuit, and the other for another branch. The difference between the opinions of shipmasters respecting the best mode of sailing a given vessel is very great. We will give an instance. A three-masted vessel of our construction was furnished with two centre boards, one forward and the other aft of the centre of buoyancy, and so placed with reference to this point and to the centre of propulsion, as to require, with an even trim, the use of both in oblique courses.

The vessel has been commanded by two masters, one of whom prefers to use the *forward* board only, while the other is equally confident that the *after* board is the proper one to work with! "Extremes meet" in every study and pursuit of man. But more than this is true. That a ship-builder should fall into the hands of the "Philistines" only *once* in five years, is a subject for special self-gratulation at his hands.

The experience of every man who has built vessels, will furnish illustrations of "grounding on the *flats*"—flats that are entirely ineligible for dredging or removal, by "appropriations" from Congress—and which sink and destroy more property for underwriters and owners in the United States, annually, than the whole class are worth, or ever earned. We have known a man promoted to command a vessel—a fore-and-aft schooner, who run before a gale of wind with the foresail stowed, and with reefed mainsail and jib, and afterwards gave her a name for *steering badly*! The same fellow at another time was taken by a squall on the weather beam, instantly put his helm "hard up," with two men to hold it, and after ordering the foresail settled away, hung on to the weather main rigging in a fit of terror, and shouted "hard up!" "hard up!" while the schooner, which was empty, and having hatches off, careened rail under, and sweeping a circle to windward, lost headway and stability, and *capsized.* On being righted and towed into port, the *dangerous* (?) qualities of the unconscious vessel were forever removed by adding a piece of wood to the *back of the rudder*, and *cutting down the masts* six or eight feet! That the "Lightning" has not suffered in like manner, we have not at this moment the date for a full judgment. It is most certainly true, that many of the most successful ships at sea, are less entitled to the first place in perfective rank; and in the hands of men fully equal to her design, it is our opinion, in the present state of marine art, very little fault would be found with her qualities. *Where genius makes one mistake, she is one thousand times misunderstood.*

THE RUDDER.

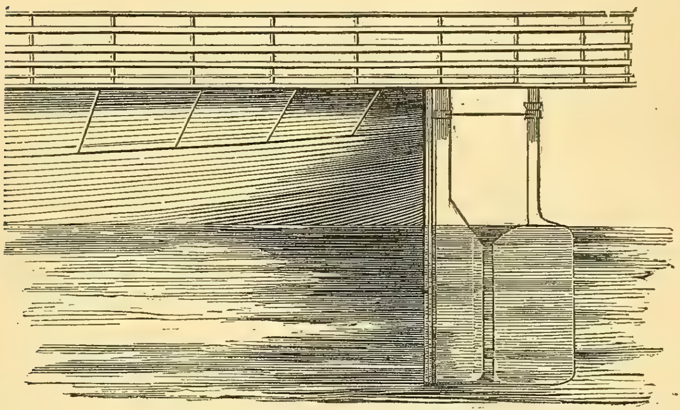
OUR attention has been called to this most important appendage to the noblest of all fabrics, on witnessing the increased efficiency consequent upon the division of a rudder into two parts. This improvement in the construction of rudders, which has been very recently introduced, is well received by those whose pursuits bring them into a familiar connection with the management of vessels; and when we remember that it is the rudder which guides the commerce of the world to its place of destination, the question becomes one of much moment to all those whose lives are spent chiefly on ship-board, as well as to those who embark their capital, and scarcely less so to those who guarantee their safety.

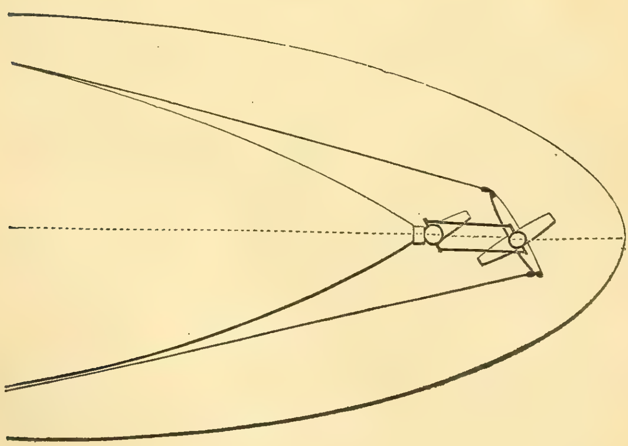
It is not more important that the mariner should be able to find his trackless path across the ocean than that he should possess the qualification to pursue it. The quadrant and the compass fail to be of service to the ship-master, where the means of guiding his vessel have become powerless. Indeed, of so much importance is this appendage to vessels of every description, that the question of efficiency has been regarded by the most discriminating men in the nautical world, as second in importance to no other problem connected with maritime science. In every vessel of which history furnishes us with a detailed account, the oar or rudder has been considered as an important qualification—the *ark* only excepted. Long antecedent to a knowledge of the science of navigation, were vessels steered by an oar at the stern. The rudder, supported by hinges or pintels and braces, has supplied the place of the oar in modern times, and from time immemorial the stern seems to have been regarded as its proper locality. It was from the stern that PALINURUS, the steersman of the vessel of ÆNEAS, fell overboard while steering his vessel. The reasons for this selection of locality are cogent, when fairly examined, and not the least prominent is that which points to its greater security from the effects of collision, which render it more reliable. It is, however, a well known fact among the best informed nautical mechanics, that the anterior part of the vessel is by far the most sensitive, and consequently the most effective, locality; in other words, the vessel may be managed with less area of rudder on the bow than on the stern, particularly if the model of the vessel be full and abrupt at the line of flotation. The exposure of the rudder to the action of the sea, beyond the reach of assistance in times of greatest need, has always elicited the sympathies of nautical men, and any relief that could be afforded either to the rudder or to the stern-post which sustains it, has commanded attention. Hence it has been the settled policy of both mechanics and mariners, to reduce the rudder area to its lowest terms. But while in sea-going vessels every effort has been made to reduce the surface within the bounds of effi-

ciency, steamboats and other vessels of light draught of water have found it necessary to increase the breadth of the rudder, in order to secure the required efficiency, while the retarding influence to the vessel's progress was directly in the ratio of the width or area of rudder surface; and the great width required for our largest steamboats has been a great drawback on river navigation, particularly in shoal water, inasmuch as the increased rudder surface required an increase of power to manage it, and a greater length of time was required to perform the evolution of bringing the vessel round, while the improved speed of the boat required that it should have been accomplished in less; hence one of the reasons why so many of our fast steamboats make no better time than others of inferior model or power. Various means have been adopted to improve the efficiency of steamboat rudders; the sides have been made to form a concave instead of a straight line, thus reducing the thickness at the centre of the width, and also reducing the strength; and while this has improved the action of the fluid, and caused the boat to yield more readily with less helm, it has done so at the expense of security; the extra strain on the after edge has bent the bolts and brought the blade of the rudder aside from the line of its stock. While these have been some of the difficulties attending the present mode of constructing rudders for river boats, those for sea-going vessels have been of equal magnitude. The stern-post has been wrenched from its place or canted on one side by the action of the sea against the rudder. The demand for strength is such that the forward edge, by which the rudder is supported, must be hinged with braces and pintels, from the keel to the load-line of flotation, and as a consequence, must be bearded on the forward edge, thus increasing the disturbance of the water already in commotion, while sundered from its adhesive connection with the passing vessel, and forcing its influence to the surface by the laws of equilibrium. Hence we discover that by the present mode of connecting the rudder, as well as of suspending it in sea-going vessels, the rudder becomes more effective at the vicinity of the surface of the water than below, while in river steamboats of lighter draught its greatest efficiency is below, where the rudder has been made to fit a socketed post and has not been bearded on its edge. From what we have shown, it must be quite clear that it is a matter of great importance that the area of the rudder should be reduced, both for sea and river navigation, provided an amount of efficiency commensurate with the demand can be secured with a reduced area. There is at present no system in use for proportioning the size of the rudder to the vessel for which it is designed. Every builder assumes that he knows how much area of rudder his vessel requires; and if we were to take the extremes of those opinions of all the ship-builders for the same vessel, we should find a variation of at least twenty-five per cent. The immersed area of rudder for our largest steamboats differs but little from eighty square feet, less than

half of which, if properly distributed, would be even more efficient. But how shall this be done? We say, divide it vertically into two parts; by this means the water, having secured a velocity at the expense of propulsory power, will continue its course until it passes the rudder, instead of, as at present, being collected into a stagnant pool on one side of the rudder, as the accompanying engravings will fully illustrate. This ingenious contriv-

ROBBINS' PATENT RUDDER.





ance is the invention of Mr. Robbins, and commends itself to the judgment of every nautical man. Some have thought that it would be objectionable on account of its liability to be obstructed by ice. Such fears are groundless,

inasmuch as there is no necessity for the after section having any part of the blade above the surface of the water, the stock only extending above water, and having two stocks or points of support, it is not so much exposed to the action of the sea, even though it required an equal amount of surface; but inasmuch as one third less, under ordinary circumstances, is quite sufficient, we cheerfully commend it to the attention of all interested.

IMPROVEMENTS IN MASTS AND SPARS FOR SHIPS.

We have repeatedly urged the necessity of a mixed construction of wood and iron for vessels, beyond that of the fastening and inside strapping used in wooden vessels, and we find that our efforts are seconded by our transatlantic friends, not only in the hulls of vessels, but also in the spars.

A ship-builder and timber merchant of Greenock has taken out a patent for an improvement in the construction of masts and spars for ships and other vessels. The improvement is thus described: the heel of the mast is made of plate iron, formed into a hollow tube, and extends from the keelson to the upper deck, into which the wooden mast is stepped. If the spar be a yard, the central part, or that usually denominated the slings, is also tubular, and formed of plate iron; the length of this central tube bears a proportionate relation to the length of the spar; each end of the yard is shipped into this tube and properly secured. It is asserted that not only greater strength is acquired, but reduced cost, and greater facility afforded for repairing damages to these appendages to a vessel's propulsory power. We are entirely favorable to the introduction of this method of making masts and spars for two reasons: 1st, it furnishes a greater amount of strength, and 2d, it affords a safeguard against the use of the spongy butts and knotty tops of trees, by reducing the length required.

Not unfrequently the scarph of a ship's mast comes directly in the partners; whereas, by this improvement, not only the expense of scarphing and hooping may be saved, but the hollow heel may be used for a water-tank or safe. The weight of the tank, filled with water, would in many instances weigh no more than the wet mast-heel, which absorbs the moisture of the whole mast. How convenient it would be to have the mizzen-mast in the cabin accessible by a door in which to store the ship's valuables, now that we need have no fears from local attraction.

WRECKS.

THEIR CAUSE AND MEANS OF PREVENTION.

WERE we to furnish an account of, or the consequent effects of, *the dangers of the ship as well as those of the sea*, it would completely fill not only the present number of the magazine, but a quarto volume; hence, we can only refer to the long list of disasters, augmented by the icy breath of a rigorous winter. The fearful effects upon human life, as well as upon property, are quite sufficient to awaken the dormant energies of *legislators* as well as *underwriters* to the enactment of such laws for the security of life, and the adoption of such rules for the protection of property, as would render the former secure against the *dangers of the ship*, and furnish the latter with much better protection against the dangers of the sea, which, in themselves, are quite sufficient. Few are aware that it is not within the scope of probability that a vessel could ever founder at sea, if her model and construction were what they should be. The sea is the great highway of commerce, and nature has made the laws which govern its motions and forces, just as they should be, in every particular; and if those to *whom* commerce on the ocean is intrusted, will but give an amount of attention *proportionate to the number of lives, value of property, and length of the voyage*, that they do to an overland journey, or even to a sleigh-ride, we should never again hear of a vessel foundering at sea, or of the passengers, officers and crew exchanging a ship for a boat, unless the ship were either on shore or on fire. A combination of science and art in marine construction can and will produce an antidote for every evil for which there is such abundant cause of complaint. Must every family-circle in the land furnish a victim for the dangers of the ship or steamboat? Who that dares look back at the history of ocean navigation, (having himself discharged his duty,) cannot count within but little more than a single year 6,000 human beings left shiftless and defenceless upon the ocean, to battle with the elements in all the fury of their unabated strength, or to find a winding sheet beneath the dark blue wave. We call upon the bereaved fathers and mothers, who, in the sorrow-stricken prudence of hoary years, have lost the staff upon which they leaned, in an only son. We call upon the brothers and sisters who, in the noon-tide of affection, have been torn from each others embrace to find a watery grave. We invoke the aid of husbands and wives, in behalf of themselves and their half orphan children, to assist us in our efforts to stay the tide of desolation and death. We ask that we may be heard in behalf of the orphans who have no one to defend their cause, in our denunciation of tonnage, and every other branch of commercial law which has proved so destructive to human life. We are prepared to show to the world that our ships are fragile, and very far from being a safe conveyance either for pas-

sengers or property, and will continue to be built with but little reference to the safety of human life, so long as the tonnage laws stand as a blot upon the page of civilized life, with their stereotyped modes of construction, and while underwriters will continue to insure ships as now built A No. 1. By the present system of construction, (if indeed it is a system,) ships are built with reference to internal capacity only. To secure an amount of strength commensurate with that capacity, or with the weight of a bulk of water equal to the internal cavity of the vessel, is never thought of, notwithstanding the ratio of increase in the capacity is known to be as the cubes, and the strength only as the squares.

Vessels having more depth than they should have, encounter (when light,) an increased amount of strain on the top-sides of the shell, while the intrinsic strength of the immersed part is only equal to the pressure or weight of the bulk of water displaced, and cannot receive any additional support from the sides or shell of the vessel. This being the case, and the bottom or platform upon which the cargo must be carried having nothing but the keel and keelson to depend on for longitudinal strength, which never in wooden vessels of any considerable length is equal to its weight ; and here we may remark, that there is not a timber keel or keelson which is 150 feet or upwards in length, that would not break with its own weight if suspended by the ends in a horizontal position, and yet these are the only dependence for maintaining the longitudinal shape of the vessel over the entire width of the bottom, from the bilge on one side to that on the other. Is it, then, a matter of surprise, that when vessels are docked their keel should be found to have altered from its original shape, or that when the ship is heavily laden, the bottom should exhibit increased dead rise to the floor, and, as it settles, carrying the decks with it, when the stanchions are kneed to the keelson and to the beams?

When the beams settle at the centre they become longer, because of their having been strained above the natural shape, and as the sides spread, the butts on the outside open; for as the sides spread, the distance must of necessity become longer from stem to quarter, hence the enlargement of the butts; and this is one of the reasons why the butts of sides, rail and deck plank are enlarged. But while we have given the largest amount of credit to the strength of the keel and keelson, in keeping the bottom down when the vessel is light, it would not be just to omit the fact, that even our strongest government vessels, and the new war steamers which are already launched not excepted, find it necessary to keep ballast in the midship part of the hold when the vessel is light, because of the weakness of the bottom ; this is done to equalize the pressure, while in the merchant service it accomplishes a twofold purpose, viz. that of furnishing ballast, and holding the flexible bottom in equilibrio.

When the vessel is loaded with heavy cargo, the downward weight far

exceeds the upward pressure, and the bottom sags below its proper place, and in some cases will not return when the vessel is unloaded. We have seen instances when the stanchions were not secured to the keelson, in which the bottom had left the heels of the stanchions from 4 to 6 inches in its downward passage, and had to be taken on the dock to bring it up to its place, and then the stanchions were kneed to the keelson and beams, when it was assumed that all was right, and nothing more was required, the bottom being held up by the decks; and we have an instance in mind in which a captain was dismissed, for no greater offence than that of allowing his cargo to exhibit the flexibility of the bottom, in which no charge of bad stowage could be brought against him—such is the prejudice in favor of the strength of our ships. We ask any intelligent mind to pause and consider the consequences of such construction, in a gale of wind, when the sea by the law of hydraulics, first increasing, and then reducing the pressure upon the bottom midships, with the greatest amount of cargo in the weakest part of the ship, and in addition to all this, the leverage of the masts and rigging under a press of sail, and answer whether the wonder is not, that there are not more ships foundered than there are. We have only the space in this article to glance at absurdities in construction, without adding thereto the deformity of shape.

But what and where is the remedy? We say it is within the reach of the insurers against the dangers of the sea. Let only such be classed A No. 1 passenger vessels, as are provided with two iron bulkheads, and an iron keelson of at least four times the strength of a wooden one. The iron bulkheads prevent the transverse transformation which takes place in the transverse sections by the leverage of the mast, when suddenly unsupported by the sea, and the iron keelson being of sufficient strength to sustain the bottom and keep it in place, while the two combined make the vessel a life-boat and a reliable conveyance for passengers; and if our government would adopt the same safeguard with vessels of war, instead of depending upon a live-oak keelson made up of 25 feet lengths, they would not be compelled to report the loss of a Hornet, Albany or Porpoise. We may be told that the bulkheads are already being adopted; very well, so far as it goes, but they are wooden bulkheads which, although calked with oakum, will not remain tight, and are neither water-proof or fire-proof, besides being more bulky. But the difficulty is increased if we only strengthen the ship in one direction, and that, the direction in which she is already the strongest, while in the weakest part or direction, she remains crippled, both for safety and service. If such a rule were adopted by the insurance companies in this country, how very soon would all our freighting ships become passenger vessels; and how very much would the long list of disasters in our magazine be reduced. And may we not again inquire how long underwriters will allow vessels to be insured as safe for the conveyance of passengers, while they dare not require that service of the vessels at home to which they are subjected at sea?

Who that has ever made a winter passage across the Atlantic does not know, that the ship and cargo is sometimes in a gale of wind suspended by the bow and stern, *and that, too, on opposite sides,* and while the tortion consequent upon the leverage of spars, rigging and sails, is operating to sunder the ship into two parts? And what ship-master has not known his ship to be suspended entirely by the midship body, while for nearly one-fourth of the length, at each end of the vessel, the keel was visible? Now, we ask if any ship-builder would permit the strength of his ship to be thus tested on the stocks when just ready to launch? Where is the ship that has been built under the present regimen of construction and insurance, that would bear such test, without being so badly strained as to require repairs before launching, if she were on the stocks? And yet every ship must of necessity undergo such trying operations at sea. But we may be told that the water affords a much more adjustible means of support than keel-blocks and shores. We grant it; and yet the advantage is entirely in favor of the advocates of the present mode of construction; for this reason, we have made an allowance of the whole cargo, which in some cases is nearly double the weight of the vessel; and yet we say that no judicious builder would, at his own risk, submit his vessel after being completed, and before launching her, to the test of strength we have proposed, although her hold be empty. How unwise, then, to send those fragile fabrics to sea with a heavy cargo, and a tenfold more valuable freight of human life, to be subjected to such perils as we would not allow them to be subjected to on land. We say in conclusion, either build vessels of iron, in which case we have no *butts*, or build wooden vessels with a larger proportion of iron, in the *shape of bulkheads, keelsons and outside strapping*, which can be screwed taut before bolting.

SUBMARINE TELEGRAPH CABLE.

The process of making this cable is simple. Copper wire of a small size, of the requisite length, is taken and completely insulated by means of gutta-percha. Three copper wires, thus enveloped, are placed together, side by side, in as compact a space as possible, all the interstices between them being filled with rope-yarn. These three insulated wires are then twisted around each other by means of machinery, as in the strands of a rope, and the whole is completely surrounded by another envelope of gutta-percha. A transverse section of this cable gives the appearance of a solid gutta-percha rope, in which appears three copper wires, running through its whole length. This is enveloped by twelve distinct large iron wires, running parallel to it, which are strongly twisted around the gutta-percha rope, as before, by means of machinery, at an angle of 45 degrees; this is then smeared with tar, and is ready for use. Its diameter is an inch and a half.

THE NEW-YORK ASSAY OFFICE.

ALL the melting and refining operations of the United States Assay Office, Wall-street, in this city, are under the superintendence of E. N. Kent. When he entered upon his duties as melter and refiner, the old expensive and troublesome method in use of recovering gold from earthy matters and sweepings, incited him to invent something better, and this excellent apparatus is an evidence of his success in his study and labors in that line. On a visit to the Assay Office recently, we saw it operate, and were pleased with its simplicity of construction and the principles of its action. It has effected a great saving since it was put in operation.

The Assay Office is adjacent to the Custom House, in Wall-street, and in it the operations of refining the golden products of California are conducted on an extensive scale. The gold, in parcels, is brought by depositors into the receiving office, where it is weighed, carefully examined, each lot marked, and certificates given. From this office, all the gold is taken to the deposit melting furnace in another apartment, and is there melted in separate parcels in crucibles, then run into cast-iron moulds and stamped. It is a curiosity to see the stalwart melters handling red-hot ingots of gold, with thick felt gloves, as calmly as masons handle bricks. These moulded ingots of five thousand dollars each, are then weighed again, and registered. This gold is now fit to be granulated with silver, to prepare it for the refining operation. It is now taken and mixed with twice its weight of silver, melted in proper furnaces in crucibles, and poured out in a molten state into vessels containing water, which, when it comes in contact, spreads it out like feathers. This operation is called "granulating," and sometimes "feathering." It gives the metal an immense amount of surface, and eminently fits it to be acted upon by the parting agent—nitric acid. The granulated metal is now taken to another room, and placed in large stone-ware vessels containing the acid. These are kept in a close chamber, and are heated with steam. A dense, noxious, yellow vapor arises from the action of the acid on the metal, and is carried off into the atmosphere through a very high chimney. Nitric acid will not dissolve gold, but it dissolves the silver of the granulated metal, taking it up in a clear solution, while the pure gold sinks to the bottom of the vessel in the state of a brown powder. When all the gold is thus separated, the clear solution—nitrate of silver—is run off into a large vat in the room below, and the gold powder is placed in wooden tubs, where it is washed with water, until the washings will not afford a white cloudy precipitate, with a simple solution of common salt in a test-glass. The washings containing the most minute trace of nitrate of silver are saved, and run into the vats below. The washed gold powder is now dripped and carried to a Bramah press, when it is submitted to a severe pressure—like a cheese—in a metal ring box. After this, all the moisture is expelled from it in ovens—the invention of Mr. Kent. From these it is taken to furnaces, melted in

crucibles, run into ingots or bars, then placed—all hot—for a few seconds in a "brightening" bath of dilute sulphuric acid, taken out, washed, and is now finished, refined gold. After this, a small bit of every parcel is taken to the Assayer's room, where it is submitted to the *experimentum crucis* of a very refined analysis, to determine its fineness. It is then weighed, stamped with its weight, fineness, and value, and is then ready to be sent to the Mint to be struck into coin for circulation, or shipped abroad to pay our foreign debts.

It requires, in the Assay Office, twice as much silver as gold to be operated upon. This silver is reduced to a nitrate—as has been described—then it is precipitated into large vats in the state of a white powder—the chloride of silver—by a solution of common salt. The nitric acid unites with the soda of the salt, and the chlorine of the salt unites with the silver. The nitrate of soda is then washed away, and the chloride of silver is precipitated in other vessels into a pure silver powder, by granulated zinc. The zinc unites with the chlorine, forming the chloride of zinc, leaving the silver in the state of a pure powder. The chloride of zinc is then washed away, and the silver powder is submitted to hydraulic pressure in the Bramah press, and again brought into the metallic state, and used over and over again, *ad infinitum*, for the same purposes, thus exhibiting the triumphs of chemistry in a simple and remarkable manner. All these operations are conducted with the most scrupulous care, and are managed with profound skill.

Considerable machinery is employed in the Assay Office. This is driven by a compact double-acting engine, made by Starbuck & Sons, of Troy, N Y. Three steam boilers are employed to raise steam for the engine, and to heat the acid baths and water required for the various washings. All the sweepings of the floors, &c., are preserved, and the old crucibles, ashes, and other refuse matters are ground up, and the gold separated by Mr. Kent's apparatus. All the gold which arrives in New-York from California is refined in this Assay Office; this amounts to about thirty millions per annum. The depositors of gold receive warrants for it, payable as soon as its value is determined—this is done in the course of one or two days after it is deposited.—*Scientific American.*

TUNNELS AND TUNNELLING.

A French engineer, M. Favre, has recently proposed the construction of a tunnel under the waters of the Straits of Dover, to unite France and England by a subterranean railway. Surveys of the route have been made; every foot of the English channel has been sounded, and recent English papers assert the practicability of the project. Its length under water will be nineteen miles; and the entrances on land, to obtain the proper grade, will be about two miles long, making a total length of about twenty-one miles. Its walls are intended to be very thick, composed of huge granite blocks cemented together, and lined with a circular shield of perforated iron plates.

PAPERS ON NAVAL ARCHITECTURE.

(*Continued from page 259.*)

As our preceding article has demonstrated that it is most important that, in order to make any advance in the science of naval architecture, our *tonnage law must be altered*, and in order to show how slow the growth of good things has been, we will extract from a valuable work written in the year 1800.

"In consequence of an order written by Sir Richard Haddock, a Commissioner of the Navy in the year 1684, a curious inquiry took place with regard to the solid contents in feet, of so much, contained in the body of a ship of each class, from the fourth rate down to the sixth, as was immersed in the water, and a comparative view drawn between the nominal burthen, calculated according to the practice then used, and the actual quantity in weight which vessels of the form annexed were capable of carrying to sea. This measure first exposed the fallacy of the one then adopted, and seems to have been the first step taken towards uniting a philosophical theory with the science of marine architecture; and many very scientific men, unacquainted with the circumstances of such an inquiry ever having been se on foot, have considered it, in modern times, as one of the first desiderata that could lead to improvement in the art."

This inquiry included with it a second, no less consequential than the first; and, like many other curious investigations set on foot, in ages far remote, appears to have been passed over in silence, and consigned to a very unworthy oblivion. It had been the practice of the ancients, to consider the length of their vessels as a measure indispensably necessary to their perfection. A want of sufficient breadth was little or no consequence to them: their war galleys were impelled with oars, and ventured to sea at such times only as gave little reason to apprehend tempestuous weather. Alt ough the system of naval war had been so materially altered, notwithstanding oars had been exchanged for sails, and slings, or arrows for cannon, yet the prejudices and principles of former ages had grasped the human imagination so firmly, that it scarcely knew how to exert its own natural reason, and emancipate itself from their trammels.

To this cause is to be attributed that scale of proportions adopted in the last century, which has been found so inconvenient and improper. The projector applied to by Sir Richard Haddock appears to have been perfectly aware of this subject; and with that boldness, which serves to distinguish the man of genius from the cold and laborious, he courageously stepped forth into a theory then unknown, and in the promulgation of which, setting aside its great utility, he must have been aware he would have a myriad of enemies, or, to speak the most favorably of them, sceptical antagonists to encounter. To use the artist's own words:—

"The largest midship bend belongs to the draught of the larger fourth

rate, only drawn on a more extensive scale, to show the difference between it and that which is now in use; the single line being the similitude of a midship bend usually drawn to draughts of the like dimensions. The cube feet contained in the broadest bend to the upper light line, which is the main draught of water in the midships, is 360 cube feet; and in the lesser bend are contained 294 cube feet only. I cannot conceive a competent breadth can be in any degree prejudicial to a ship's sailing, it being the sole dimensions that makes them stout under sail, and creates a circular body, which, peradventure, may add to their motion through the sea." Repeated experience has shown the expectation of stability, from the proposed alteration and augmentation of the breadth well founded; and the circumstance may serve as a useful lesson to every modern artificer, not to consider, or arrogantly suppose, any improvement in science which he may be fortunate enough to promulge, or revive, had never before been introduced to the knowledge of mankind, or that the principles on which his own genius has exerted itself, were not almost as well understood centuries since, as they are by himself. The same ingenious artist, proceeding with the task imposed on him, adds to the several draughts which he produced, the explanations, (which are tables and calculations.)

The mode of calculating the tonnage of ships appears to have been managed during the greater part of this century much more indeterminately than can readily be credited. The Royal Sovereign, when first launched, was calculated by her builder at 1637 tons burthen.

In a manuscript list of the vessels belonging to the navy, anno 1651, the same ship is described as being only 1141 tons.

By a third account taken 1654, this burthen or tonnage is increased to 1556; all of them wide of the original number, which never appears to have been given to the vessel after its being first launched.

The same variation takes place almost uniformly through all the ships of the navy, and fully proves, that the calculations alluded to were founded on little more than mere supposition.

The cubic feet that are contained in the bodies of several draughts, to their main water line, when all materials are on board fit for sailing, are demonstrated in the several columns; and each foot will bear or lift in salt water near 64, which cube foot being compared with the weight of each ship's hull, and all manner of materials on board will be found of equal balance to a pound, by which it is manifest, that the weight of water each ship moves by her impression, is equal to her entire weight, and all provisions on board complete for sailing. A work worthy every master-builder's consideration, especially those belonging to his Majesty's own yards.

The drawings and tables accompanying these remarks have been omitted, as the language is sufficiently plain without them. Although these things were brought before the English public so early as the year 1684, yet one

hundred and twenty years have passed, before advantage enough was taken of them to bring out the present perfect system of tonnage laws. Let it be hoped that so much time will not elapse, before the United States of America shall awake to the fact, that they must inevitably fall back to the most possible forms in constructing their ships, and that millions of human beings, already dead, cry out for a reform which will render life safe at sea. Our legislators must not allow man's avarice to take away the lives of men. For it is a mere lottery, and the chances are against you if the working of the present tonnage laws are allowed their full swing.

PHINEAS PETT.

ESTABLISHMENT OF OCEAN STEAM NAVIGATION.

THE following letter from the pen of R. B. Forbes, Esq., of Boston, published in the *Scientific American* about one year ago, forms an interesting record of the earlier enterprises in navigating the ocean by steam, and describes the part which Mr. Forbes took in establishing steam navigation at home and abroad with American vessels.

"I built the auxiliary steam propeller *Massachusetts* for myself and others in 1845, and sailed in her on the 15th September, or thereabouts, from New-York for Liverpool, and arrived on the 2d of October, having used steam nearly eleven days out of seventeen and a half. This was the first packet ship under steam that started and performed more than one complete voyage between the United States and England under the American flag, and was the first propeller that was put into the trade. The *Savannah*, a ship with a small steam-power applied to paddles, went to England in 1819, from the United States, and I believe she returned, but whether she used steam altogether, or only occasionally, I know not.

"The propeller of the *Massachusetts* was of composition metal, 9 feet diameter. She had two cylinders of 17,640 cubic inches each, set at right angles. The propeller was contrived to take out of the water at pleasure, and when out of the water the ship was a perfect sailing ship of about 760 tons. She made two voyages from New-York to Liverpool and back, and was then chartered, and afterwards sold to the War Department, and is now on the Pacific.

"The steam schooner *Midas* was the first American steamer that ever went round the Cape of Good Hope. She sailed from New-York on the 18th November, 1844, and after touching at Mauritius and Singapore, arrived safely in China, and ran on the river between Canton and Hong Kong until her boiler was worn out, when she was sent to Rio Janeiro under canvas, and thence came to New-York, and was sold, and is still running as a sailing vessel.

"The steam barque *Edith* was built, as were the *Midas* and *Massachusetts*, by Samuel Hall, of East Boston. She sailed from New-York February 18, 1845, for Bombay, under command of Capt. George W. Lewis, and was the first American steamship that went there. She proceeded from Bombay to China in 24½ days, beating all her competitors, and after running a short time, was sent to Rio Janeiro with teas and silks under sail, and from there came to New-York, was chartered by the War Department and finally sold, and went (as did the *Massachusetts*) round Cape Horn to California, and was there lost. The *Edith* was therefore the first steamship that ever went to China and back, where the steam was afterwards available.

"I am not sure, but I think no American steam vessel has been to Bombay since the *Edith.*

"The little iron steamer *Mint*, built for myself and others, was the first steam vessel that plied on the waters of the Sacramento. She went out complete on the deck of ship *Samoset.* Gen. Scott had his flag and staff on board the *Massachusetts* at the taking of Vera Cruz.

"I believe the *Falcon* paddle-steamship was the first steamer under the American flag that went to Chagres. She was built by myself and others, and was sold to George Law, and was under his orders at the time she went to Chagres.

"The propeller *Marmora* went to England before the *Massachusetts*, on her way to the Mediterranean; and the steamer *Bangor* (paddle) went to Gibraltar; but the *Massachusetts* was the first regular steam packet ship between us and England under our flag.

"I sent to China, in frame, the steamer *Spark*, now running between Canton and Hong Kong, the first American paddle-wheel steamer that ever run in Chinese waters. In 1848, I sent to China a little iron propeller, the *Firefly*, which plied between Whampoa and Canton for one year, and was sold to go to San Francisco, where she ran for some time.

"Yours truly,

"R. B. Forbes."

In 1846 the *Southerner* was built, and put upon the route as a regular mail steamer between New-York and Charleston, S. C. This was the first American ocean *mail* steamer. The *Great Western* had made regular trips between England and New-York ten years before.

The author of steam navigation in the open sea was R. L. Stevens, of New-York, who, more than 40 years since, took a steamboat from New-York to the Delaware. Steam navigation was established on the Irish Sea in 1818, and between Holyhead and Dublin in 1819. Fulton run the first steamboat from New-York to Albany in 1806.

CAUSES OF LOSS OF SHIPS AT SEA.

From the London "Nautical Magazine and Naval Chronicle," we transcribe the following list of *causes of the loss of ships at sea, by wreck or otherwise.*

"1. Short complement of men
2. Deficiency of materials and stores.
3. Deficiency of water and provisions.
4. Bad materials—anchors, chains, boats, spars, sails, cordage, &c.
5. Bad quality of water and provisions.
6. Teetotalism—coffee instead of rum.
7. Bad condition of the ship from age, want of repairs, caulking, and looking properly to.
8. Bad construction of the ship, out of trim, &c.
9. Incapacity of masters and others.
10. Presence of captains' wives and other women.
11. Insanity.
12. Inability of men or crews from sickness, maims, exhaustion, &c.
13. Drunkenness, revelry, &c.
14. Discipline, too lax or too severe.
15. Mutiny and insubordination.
16. A dead and alive set—no devil on board.
17. Discord and dissension—the devil let loose.
18. Deaths, desertions, and discharges.
19. Fire.
20. Collision.
21. Upsetting in a squall.
22. Shifting of cargo.
23. Consternation, the ship on her beam ends, on fire, water logged, &c.
24. Shipping of seas, foundering by stress of weather.
25. Springing a leak by starting a butt-end, &c.
26. Deep lading, crowded stowage on deck.
27. Striking on rocks, grounding on shoals, &c.
28. Driving on a lee shore.
29. Impressment at sea, detention and deviation.
30. Incorrectness of charts, compasses, &c.
31. Want of care—bad dead reckoning.
32. Want of vigilance, bad look-out.
33. No latitude by observation, on account of fogs, &c.
34. No flying the blue pigeon, no regard to lights, bells, drums, &c.
35. Capture or destruction by the enemy or pirate.

36. Struck or blown up by lightning.
37. Masts, &c., rolled or pitched away.
38. Driving with a foul anchor a kink in the cable.
39. Parting a cable.
40. Staving of boats, carrying away of masts, splitting of sails, &c.
41. Sleeping on watch, drowsiness of helmsman.
42. Breaking adrift of floating lights.
43. Mistaking of head-lands, lights, &c.
44. Sinking or destroying a ship purposely.
45. Rising of prisoners, convicts, &c.
46. Fool-hardihood—guns run out when blowing hard upon a wind, press of sail with a crank ship.
47. Carrying away topmasts from neglect of breast back stays after going about.
48. Broaching to, when weathering a head land in a gale.
49. Incapacity of persons having charge as pilots.
50. Abandonment of ship without sufficient causes, in case of wreck, officers leaving their juniors in command, with orders to land the treasure, the men, &c."

The writer adds: "These perils and faults, often disastrous and sometimes fatal, to which sailing vessels are liable, to say nothing of steamers, are not all that might be mentioned. A ship may be lost from circumstances which seem trifling in themselves and even ridiculous. A ship was lost (as is supposed, for no one has told the tale,) from the habit of smoking between decks. Another because a cask was not properly secured. An East Indiaman was burnt, owing to a boy wanting to look into the bung-hole of a puncheon of rum to see if it was full."

Query.—Would the writer charge the latter to cause No. 6, teetotalism?

EDS.

NEW USE OF ELM TIMBER.

WE are informed by Capt. Gooding, of Michigan, who is an old ship-builder of that State, that Mr. E. B. Ward, the great steamboat owner of Detroit, has for two years past made extensive use of *rock elm* for the waist or wales of steamboats, in preference to white oak, chiefly on account of its superior qualities for avoiding shrinking, swelling, or warping. A fairer and better side is maintained by this *leathery* material. Mr. Ward also uses it for clamps, ceilings, and many other purposes heretofore thought possible to be served best only by white oak. One of his small steamers tow it many miles down Lake Huron shore to Newport, where all his boats are built. Will not Mr. Ward furnish us with his experience in the use of elm as above noticed? It is not uncommon to find the most conflicting prejudices existing in different sections of the country, regarding the qualities of various kinds of timber used in ship-building. Our experience has taught us to be the foe of prejudice, where ever found. Sense and science alike revolt at it.

RECENT IMPROVEMENTS CONNECTED WITH VESSELS PATENTED IN ENGLAND.

Feb. 6, 1855.—An invention to "apply the SCREW PROPELLER in all cases at an angle; for example, when one screw is used in the deadwood of a ship, the screw must be placed with its axis at such an angle as may be produced by drawing a line from the centre of the propulsion, in the boss of the screw along the centre line of the keel, up to the centre of gravity or motion of the vessel."

Feb. 7.—An invention to "make use of the natural clay foundation for the floor of dry docks, the sides and back end being formed of piles, the puddling between the inner and outer piling resting upon the clay floor, and forming a continuation of it after the manner in which coffer dams are puddled."

Feb. 17.—Improvements in the masts and spars of vessels, which consists in "employing a frame or tube of iron for the lower part of a mast, and constructing the upper part of wood, and making the spars of vessels, by using iron tubes for the middle parts, and wood for the two ends."

Feb. 22.—A composition for covering and protecting the bottoms of vessels. By means of steam, the inventor melts in an iron vessel furnished with a jacket, 35 parts of pitch or rosin, and then adds 35 parts of a preparation of chalk, (made by washing the sand out of the unprepared chalk), afterwards drying and grinding the mixture to a fine powder. The two materials are then well mixed, by means of an agitator revolving in the vessel, and the inventor adds carbonate of barytes, in powder 25 parts, and sulphate of copper, in powder 5 parts. The whole being well mixed and allowed to cool down to 100° F., as much crude naphtha or spirit of turpentine, is added, as will make it of a consistence fit to be used with a brush, when the composition is prepared."

March 1.—Improvements in marine compasses, &c. The inventor claims, 1. "a general arrangement and construction of marine compasses, as described. 2. A mode of effecting the corrective adjustment of marine compasses, by means of fore-and-aft and athwart-ship adjustible magnets. 3. The application and use of one or more adjustible corrective magnets, on each of the four sides of the binnacle case, for counteracting the deflection or derangement of the indicating compass needle. 4. The application and use of opposed or corrective magnets ! disposed one above and one below the compass needle's level. 5. The application and use of vertical or segmental graduated scales, for indicating the set or adjustment of the corrective magnets. 6. A mode of effecting the proper corrective adjustment of the shifting magnets, for the ship's inclination, by the aid of a pendulous index and segmental scale. 7. The application and use of a dumb compass card, and sight apparatus, for obtaining the sun's azimuth and altitude. 8. A mode of ascertaining the whole error of the indicating compass needle, by

means of a dumb compass card, and adjustible style, and graduated latitude, and hour or time scales."

March 5.—An improvement in anchors, viz., "fitting flukes of large area to an anchor, so as to adapt the same, for holding in soft or sandy soil." An American invention, DE GUINON, Brooklyn, N. Y.

March.—An improvement in the oscillating steam engine—consisting in the employment of ports and valves, in or around both trunnions of the cylinder, through which the steam enters the cylinder on both sides at the same time, and from points opposite each other, and thus the steam contracts and balances itself, and prevents the friction and strain which is occasioned by taking in the steam on one side only at a time. The trunnions on which the cylinder oscillates, are of conical form, tapering from the cylinder, and fit to them conical seats; and this invention also consists in making the trunnion bearings adjustible to the trunnions, by set screws so applied, as to adapt the conical trunnions to their conical seats, to tighten the valve and compensate for the wearing by friction, should the friction in its seat render it necessary."

TIMBER ROT.

SOME years ago, a philosopher, being acquainted with the fact that every species of fungus, which is the real source of rot in timber, can vegetate only on substances which are soluble in water, made the following experiment with saw-dust:—He took a portion of saw-dust from a heap, and divided it into two equal parts; one heap was washed over and over again in water, till every thing soluble was removed; the other heap was undisturbed. Both having been dried, were placed, side by side, in a damp, close vault, and allowed to remain there several weeks. They were at length taken out, and the following was the result:—That portion which was washed until nothing more could be carried off by water, remained clean and bright as when it was carried into the vault; the unwashed portion had become the prey of foul parasites, and was completely imbedded in an offensive mass of mould. This experiment proved the theory of the philosopher, and convinced him that if by any means timber of any sort could be deprived of all those matters contained in it, which are soluble in water, it could be kept for a great length of time, entirely free from rot. Cleanliness, undoubtedly, contributes to the preservation of timber.

STEAM-SHIP RAILWAYS.

It may be proposed to widen the track of railroads, increase the size of the cars and the power of the locomotives. Water conveyances have been increased in size through many successive increments, from the slight canoe to the vast steamship. Land carriages have made no such progress. The rail-car now in use is but a small remove from the horse-wagon. Why do we not construct rail-cars as broad and capacious as steamships? Why do we not dip up steamships from one river or ocean, place them in a rail-car, and whirl them overland to another river or ocean? Is it not pitiful that the swift and magnificent vehicles which convey our citizens and our commerce over the stormy deep, and which bear within them the power to scale the lofty mountains and skim the wide plains of our continent, should be checked in their proud career by a narrow isthmus? Why shall not the same power which turns a paddle-wheel through the water be made, by an easy mechanical contrivance, to turn a driving-wheel on a rail? The same power will be immensely more efficient on a rail than on the water, from the fact that friction on a rail is much less than on the water at the same speed, especially at a high rate of speed. Steamships themselves might form the bodies of cars, when placed in a frame, or cradle, over suitable running gear. If the track be made wide enough, cars may be converted into rolling hotels, two or more stories high, and may contain the chambers, parlors, dining-rooms, and other conveniences of steamships, if not of stationary public houses. The great law of economy, in regard to time and power, and fuel and labor, demands the establishment of broad roads, suitable for ships and for large cars on the principal thoroughfares, say, on the Isthmus routes of Panama, Tehuantepec, and Nicaragua, and on the trunk, if not on the branches of the great road which must connect the Atlantic with the Pacific, across the centre of our continent. So the Isthmus of Suez may be overcome by a ship railroad. Unless unusual physical obstacles intervene, ship railroads may connect the Black Sea and the Caspian, and perhaps even the Aral, and this with the river Yang-Tse-Kiang. There would be as much comparative saving of time, and power, and labor, by the employment of large cars instead of small ones, as there is in the employment of ships instead of canoes. Large cars could be driven with safety at a rate of speed not attainable by small ones. If the cars be adapted to steam-ships, these can leave the Atlantic ports, either going East or West overland, and arrive in the East Indies, in a few days, without breaking bulk. For such a road, rivers, lakes, and inland seas would serve as switches and depots. Such roads leading into the interior from the principal seaports, would add greatly to the efficiency of a navy. Ships of war could be built in the interior. They could temporarily retire inland before superior force, or for strategetic rea-

sons, where the enemy could not follow; and they could be speedily collected in overwhelming force to succor any port threatened with attack. On the other hand, some for fortified seaports, and even inland towns, may be assailed by ships of war, or floating, or specially constructed rolling batteries moved on railroads properly laid in trenches. But it is not necessary to specify all the military uses of such roads for invasion or defence. It is enough for our present purpose to infer that, if such roads are practicable, their construction in some localities for military or naval roads, or for other national purposes, may be so apparently necessary as to render the building of them, wholly, or in part, by the general government, a proper exercise of its powers. It would seem, therefore, perfectly competent for the general government to institute experiments to test the practicability of such roads.

The writer of the above, which we clip from that excellent sheet, LIFE ILLUSTRATED, is a bold thinker and a practical reasoner, and like all others of similar stamp, he must expect to be assailed by those whose half developed idea, inherited from their ancestors, is likely to be swallowed up by this onward age. His suggestions are feasible and worthy of a progressive mind.—EDS.

EXPERIMENTS UPON THE PROPORTIONATE STRENGTH OF BOILERS.

AT a late meeting of the British Association for the advancement of Science, Mr. Fairbairn stated that he had undertaken a series of experiments to determine not only the proportionate strength of boilers, but also to offer suggestions for their management. He had a boiler made 17 feet in diameter, with two internal tubes, 3 feet in diameter. It had stood a pressure of 80 lbs. on the square inch, but at 100, one of the tubes collapsed. Their object was to discover a means of proportioning the strength of all the parts. It was also desirable to discover something as to the elastic force of steam, and its properties. As yet Mr. Fairbairn had been able to make but a few experiments. In reply to a question, he said he had investigated no less than a dozen explosions, and there was in the press a series of papers, stating, so far as he knew, the causes. Sometimes they arose from gross negligence, but he believed a majority arose from excess of steam, and it was desirable to be able to proportion the strength of all the parts.

EXPLOSIVE PROPERTY OF WATER DIVESTED OF AIR.

Robert Hunt, F. R. S., in a recent lecture delivered before the Royal Cornwall Polytechnic Society, directed attention to some most remarkable facts in connection with the action of heat on water containing no air, stating that "from this circumstance, as well as from the spheroidal condition of the steam generated, there arises two very active and predisposing causes of boiler explosions. Water is known in three conditions: as a fluid, as steam, and as ice. It is frozen by the abstraction of heat, and ice formed during agitation contains no air-bubbles; but if formed from water in a quiescent state, the upper portion of ice is found filled with air-bubbles in vertical lines, showing that in making their escape they became lodged among the crystals. Water in the process of congelation has the power of rejecting all matters held in its volume; consequently all the air it contains is expressed. Under all ordinary circumstances water contains some portion of air, but if we get that which contains no air, and prevent the access of air to it, it will not boil at 212° Fah. In this state we see the temperature rising to 230°, 240°, or even 250°, and advancing to between 270° and 280°; when about these points the whole mass will explode with the violence of gun-powder.

"This condition of water," says Mr. Hunt, "is not unfrequently found formed in steam boilers. During the process of ebullition, the steam carries off the air, leaving very little, if any, remaining in the boiler. Steam boiler explosions often occur after a rest of the engine; and when the feed-water is again applied to the mass in the boiler, explosions take place. Professor Donne has found that if we take water of this peculiar character, bring it up to 230°, and place a *single drop* of ordinary water into it, the whole will boil with extreme violence; supposing such water in a boiler contains no air, and the feed-water is turned on, the entire volume will then burst into explosive ebullition. We shall probably find, therefore, in connection with boiler explosions, that to the absence of air in the water of the boiler may be attributed many explosions which cannot otherwise be possibly accounted for."

It is obvious to us that a plain distinction should be made between the ordinary bursting force of steam acting upon the interior surface of a steam boiler, and the violent explosive action of water, which sometimes rends into fragments the strongest plates of iron ever found in steam boilers. We believe that a due regard to the strength of parts confining steam will secure safety from its dangers; but in our opinion, no adequate security can ever be realized from the explosive properties of water, under the above circumstances, by any strength which we can command within practical limits. What the effect of furnishing air, as well as water, to steam boilers would be, has never been investigated, to our knowledge. Who knows but that the maximum results of steam and air power will be found in combining water and air in just proportions in a common boiler?

DR. KANE IN THE POLAR SEA.

AT a late meeting of the American Geographical Society, in this city, the interest of the proceedings was enhanced by the presence of Dr. Kane, the Arctic explorer, who gave an outline of some of his discoveries. His remarks commenced by allusions to the mountain ranges in North Greenland:—

" After leaving New-York, we made the coast of Greenland at its most southern point. We then continued on our voyage to Uppernavick, and then to Smith Sound. On reaching Smith Sound we expected to have an open sea. The reverse was the case. A boat was launched and landed on the nearest great island, to lay a store of provisions to fall back upon, in case of a retreat, and then we pushed on our ship further to the northward. From this point our vessel was forced up to our winter harbor. When we reached this winter harbor the difficulties of going further north were so great, that my officers addressed me a letter requesting a return to the south. This was not in accordance with my instructions, and I declined to accede to the request. At this point we have a constant glacier stretching out. With great difficulty here we were enabled to travel by sledges, and in this way parties set out for exploration, and in this way we reached the latitude of 80 degrees—the most northern point which had yet been reached. At this point our parties were compelled to return, and did so with the intention of renewing the exploration when the winter was over. In our winter harbor we established an observatory, by means of a theodolite and a common pocket glass. We established a magnetic observatory and meteorological observatory, the records of which are now deposited in the office of the Coast Survey. Our alcoholic thermometers we found to be utterly unavailing, and the only way we could get at the temperature was by a comparison of instruments, and this with great care. Our lowest recorded temperature was between 70 and 80 degrees below zero. At this temperature chloroform was almost solid.

" This was the temperature in which we made our explorations. Our first party was unfortunate. They set out in March. Storms overtook them, and they finally got back to the vessel, where three of the number underwent amputation, and two died. It was three weeks before we were able to start out again, and when we did so, we found that the coast of Greenland did not, at this point, run in a course represented on the maps, but it presented a coast running almost east and west. Here we discovered a new land, which we named Washington. This land was flanked by a range of lofty mountains, 2,800 feet in height, and these ranges stretched out, apparently, far to the north. The latter portion of this travel was the most interesting. We found before us a field of ice, and over this we found an open water, which has since been called the open Polar

Sea. This water appeared iceless. It was apparently without ice. Not a particle of ice lined its shores. At an altitude of 300 feet, as far as we could see, an open sea met our eye. A gale of long duration swept over this water, but brought no drift along with it. All animal life resorted to these waters. The seal was shot upon its shores, and the duck resorted to it from every direction. We could not tell the exact temperature of this water, but it was warmer than any other found below."

Had an equal amount of science been exhibited in providing the right kind of *vessels and boats* for the last expedition of Dr. Kane, as was manifest in other departments of the expedition, we have no doubt that the world, as well as Dr. Kane himself, would have realized much more satisfactory results.

The models of the vessels should have been adapted to ice-bound regions, as well as the boats, which should have been furnished with sled runners and triangular sails, in which case he would not have been dependent upon man or beast, for propulsory power to impel him onward.—Eds.

ROYALTY AND SCIENCE.

The following extracts of a speech, recently made by Prince Albert, at Birmingham, England, at the laying of the corner-stone of a new edifice, are so peculiarly applicable to ship-building, that we commend them to the consideration of every ship-owner and nautical mechanic in the United States. We would that they were inscribed in letters of living light, upon the face of the moon, that all the world might read them:

"In all our operations, whether agricultural or manufacturing, it is not we who operate, but the laws of nature, which we have set in operation. It is, then, of the highest importance that we should know these laws, in order to know what we are about, and the reason why certain things are, which occur daily under our hands, and what course we are to pursue in regard to them. Without such knowledge we merely go on to do things just as our fathers did, and for no better reason than because they did so—or improve upon certain processes by an experience hardly earned and dearly bought, and which, after all, can only embrace a comparatively short space of time, and a small number of experiments. From none of these causes can we hope for much progress; for the mind, however ingenious, has no materials to work with, and remains in presence of phenomena, the cause of which are hidden from it.

"But these laws of nature—these Divine laws—are capable of being discovered and understood, and of being taught and made our own. This is the task of science; and while science discovers and teaches these laws, art teaches their application. No pursuit is, therefore, too insignificant not to be capable of becoming the subject both of a science and an art.

"No human pursuits make any material progress until science be brought to bear upon them. We have seen many of them slumber for centuries; but from the moment that science has touched them with her magic wand, they have sprung forward and taken strides which amaze and almost awe the beholder. Look at the transformation which has gone on around us, since the laws of gravitation, electricity, magnetism, and the expansive power of heat have become known to us! It has altered our whole state of existence—one might say the whole face of the globe! We owe this to science, and science alone; and she has other treasures in store for us, if we will but call her to our assistance. It is sometimes objected by the ignorant that science is uncertain and changeable; and they point to the many exploded theories which have been superseded by others, as a proof that the present knowledge may be also unsound, and after all not worth having. But they are not aware that while they think to cast blame upon science, they bestow, in fact, the highest praise upon her. For that is precisely the difference between science and prejudice; that the latter keeps stubbornly to its position, whether disproved or not, while the former is an unarrestable movement toward the fountain of truth—caring little for cherished authorities or sentiments, but continually progressing—feeling no false shame at her shortcomings, but, on the contrary, the highest pleasure when freed from an error, at having advanced another step towards the attainment of Divine truth.

"We also hear, not unfrequently, science and practice, scientific knowledge and common sense, contrasted as antagonistic. A strange error! For science is eminently practical, and must be so, as she sees and knows what she is doing; while mere common practice is condemned to work in the dark, applying natural ingenuity to unknown powers, to obtain a known result. Far be it from me to undervalue the creative power of genius. But nobody will tell me that the same genius would not take an incomparably higher flight if supplied with all the means which knowledge can impart, or that common sense does not become only truly powerful when in possession of the materials upon which judgment is to be exercised.

"No pursuit is too insignificant not to be capable of becoming the subjects both of a science and an art. The fine arts, as far as they relate to painting and sculpture (which are sometimes confounded with art in general,) rest on the application of the laws of form and labor, and what may be called the science of the beautiful. They do not rest on an arbitrary theory, on the modes of producing pleasurable emotions, but follow fixed laws, more difficult, perhaps, to seize, than those regulating the material world, because belonging partly to the sphere of the ideal and our spiritual essence, yet perfectly appreciable and teachable, both abstractly and historically, from the works of different ages and nations."

THE NEW IRON MORTAR-BOAT.

The iron mortar vessel, launched from the building-yard of Mr. John Laird, at the south end of the docks, lately, is so constructed, that when she has mortar, shell, crew, and every necessary appliance on board, she will only draw three feet of water. She will present very little bulk above the surface, and as she will be painted sea-green, it will be impossible for the enemy to distinguish her from their batteries, even when within range of their guns, except from the occasional puffs of smoke from each shell. She is of 100 tons measurement, and is made of the best iron plates, manufactured at the Mersey forge. The expedition with which she was constructed, is, we believe, unprecedented. The order was received by Mr. Laird on the 23d of October; the keel was laid down on the 25th of the same month, and on the 13th of November, just three weeks from the day of the order being received, she was launched in the River Mersey, all complete, with mortar-bed, masts, rigging, anchors, cables, sails, shell-room, accommodation for crew, &c. She left Liverpool for Portsmouth, in tow of the steam-tug Uncle Sam, on the day after she was launched, and arrived at Portsmouth on Thursday, having been delayed by being obliged to put into those ports, owing to the severity of the easterly wind. The vessel is strongly built of iron, with wooden decks, and the complicated nature of the work would have precluded the possibility of her completion in this short time, had not Mr. Laird had relays of men working night and day. The iron plate, &c., were ordered from the Mersey forge from time to time, as required, and were generally delivered within twelve hours from the time of the specification being sent in. The construction of this mortar-boat shows the rapidity with which work can be completed in the Mersey, when all the facilities are properly applied. This is the first English mortar-boat built of iron, and if the experiments, immediately to be tried upon her, answer the anticipations of the Admiralty officials, we may expect to hear of a large order being given for the construction of more upon the same principle.

Mr. Laird is also constructing fourteen wooden steam screw-gun-boats, of 240 tons each, and about sixty-horse power. They will be similar in size and armament to the Lynx, Arrow, Viper, Snake, Beagle, and other boats which have become famous in the history of the naval operations of this war. Mr. Laird is building seven of these boats at his yard on the margin of the great float, at Birkenhead; and seven on the Liverpool side. Although the order for them was only received from the Admiralty six weeks ago, already about 1000 feet of building sheds have been erected at these yards, and fitted with gas, so that the men can work at the vessels night and day. Four of the boats are well advanced in frame, and the whole are to be ready for sea by March next.—*London Mechanics' Magazine.*

CUP SURFACE BOILERS.

THIS is the name given to a new description of boiler recently invented and tested in England, which is proposed to be used for marine as well as land engines. It is the invention of Mr. Barrans, of Brighton, and from the following experiments is shown to possess extraordinary evaporative power. The main feature of the invention consists in introducing into the fire-box a number of cups which project into the water space, their concave surfaces or mouths being turned towards the interior of the fire-box. The effect of these cups is stated, in the first place, to increase considerably the extent of heating surface in contact with the water; and in the second place, to prolong the time during which the heated gases are in contact with that surface, retarding their escape by presenting a vesicular surface to their action. Careful experiments have been made upon the original model, and with a boiler upon the same principle as the model, but nominally of 12 horse power, which had been some time at work in London. The total heating surface of this boiler was 151.09 square feet, including the fire-box and cup surface; area of grate 4.17 square feet. Ratio of total heating surface to area of grate, 36¼ to 1. The net increase of the fire-box surface due to the cups, were 15.74 square feet, or 58 per cent. The experiment lasted two hours and thirty-three minutes; consumption of coke, 305 lbs.; consumption of water, 304 gallons, or 3.040 lbs.—equal to 10 pounds of water per pound of coke. Says Daniel Kinnear Clark, who conducted this experiment, "it would appear, therefore, that 36 feet of surface has done as much in the boiler under trial as 45 feet of surface would do in ordinary locomotive boilers with the same proportion of fire-grate," equal to an economy of 20 per cent. of heating surface.

The superiority of the cup surface principle, over the plain fire-box arrangement, has been more fully shown by an experiment conducted by the editor of the *London Mechanics' Magazine*, upon an upright cylindrical boiler, from which results of the most striking character were obtained.

"This boiler is furnished with 64 cups, inserted all round the fire-box plate, and with six others of a somewhat different form, fitted into the crown of the fire-box. Into the fire-box crown are also inserted three flue-pipes, which pass thence through the water and steam spaces above, forming a triangle, their upper ends meeting at the top of the boiler-shell, where they enter an iron chimney, which is bolted down to the shell. This boiler also contains a water-chamber, suspended over the fire from the crown of the fire-box, by means of screw-bolts. This chamber is a few inches less in circumference than the fire-box, and the same distance below the crown, thus allowing the heat to play all around it, and also affording access to the cups opposite to and above it. It is furnished with flue-tubes, through which the gases pass directly to the crown of the fire-box, and to the cups, inserted in it. These tubes are of course surrounded by the water in the chamber. A copper pipe, 2½ inches in diameter, and spreading out into a trumpet mouth at its

upper extremity, passes through the crown of the fire-box, and extends into and through the crown of the water-chamber, its upper end standing in the water space of the boiler from one to two inches above the crown of the fire-box, and its lower end reaching to within two inches of the bottom of the chamber. By means of this pipe, the water in the boiler and chamber is caused to circulate, whilst the steam formed in the chamber ascends with the water, and passes into the steam space above.

"In our trial of the evaporative power of this boiler, the fire was lighted with 3 lbs. of shavings, 10 lbs. of split wood, and 40 pounds of ordinary gas-coke, at 6 minutes past 11 o'clock, with the feed water at 62°, and the safety-valve screwed down to 40 lbs; at 36 minutes past 11 steam was blown off. The valve was then screwed down to 60 lbs; and the steam blew off at 38¼ minutes past 11; the valve was then screwed down to 70 lbs., and the steam again blew off at 39½ minutes past 11. Thus from water of 62°, steam of 40 lbs. pressure was generated in 30 minutes; steam of 60 lbs. in 32¼ minutes; and steam of 70 lbs. in 33½ minutes. The fire was then levelled, and the quantity of fuel supplied, and the water evaporated during the two following hours measured. During that period the weight of the coke consumed was 80 lbs., and that of the water evaporated 980 lbs., (98 gallons); thus each pound of coke was found to evaporate into steam 70 lbs., 12.25 lbs. of water at 62°, while in the most careful laboratory experiments, 1 lb. of pure coke is found to evaporate no more than 12.4 lbs. of water at 68° into steam of 30 lbs. This result, which indicates that in the boiler under trial more than 98.7 per cent. of the whole heat produced by the combustion of the coke was transmitted to the water, is certainly of a very important character, and proves that Mr. Barrans' arrangement is a very valuable one. Throughout the trial the steam blew off freely and dry, and no priming whatever could be observed."

"The proprietors of the patent, Messrs. Hughes, of Brighton Railway Foundry, are manufacturing this boiler for marine purposes, and we entertain no doubt it will prove one of the *real* improvements of the times.

WAR.

TERRIBLE thought! the mind of the philanthropist recoils at the bare announcement of the enormous preparations which are being made by the Governments of Europe for the wholesale slaughter of human life. The greatest of all inventions would be that which would enable one of the belligerents to disarm his adversary without wounding him, to render him powerless to harm without disabling him.

HISTORICAL SKETCHES OF SHIP-BUILDING.

BY A SHIP-BUILDER.

NO. IV.

DURING the early part of the fifteenth century naval science made rapid studies in progression. The compass was not only known, but generally adopted. Navigators could take observations by the use of an instrument called the astrolabe, invented by the Portuguese. The Spaniards and Portuguese had acquired the art of sailing "by the wind," and their smaller vessels were fitted for this manœuvre. The Netherlands had sprung up, and became the most formidable naval power in the north of Europe, being far superior to France. Venice now boasted the employment of 3,000 ships in commerce, which were manned by 17,000 seamen. She also supported a navy of 300 sail, with 8,000 men; and her ship-yards employed 16,000 carpenters. Portugal had pushed her discoveries round the Cape, and Spain had added the new World to the Old. During this period England was torn by the wars of the houses of York and Lancaster, and her progress was thereby greatly retarded.

Toward the close of the fifteenth century, Spain and Portugal rose into superiority in commercial enterprise, in consequence of their explorations of new routes and countries, and were not long in giving the death-blow to the commercial states of the Mediterranean, which had hitherto monopolized the overland commerce with the East, but which, upon the discovery of the passage by the Cape of Good Hope, passed out upon the ocean. The prosecution of such long voyages as those around the Cape demanded especial care for contending with the stormy seas, and we find exclusive attention was given to the construction of the early East India squadrons. These vessels were also built of smaller tonnage, under the very proper idea that small vessels were better adapted to navigating unknown seas than those of large size. The squadron of Vasco de Gama consisted of four vessels, one of 200 tons, one of 120, one of 100, and one of 50 tons. The large ship was the storage-ship, the small one to coast the shores, and the others for a display of force. We may readily conceive that these vessels embodied the *ideal* of modeling in those days, and Portugal, by these efforts at perfective ship-building, soon became renowned for the superior qualities of her shipping. Spain, on the other hand, having to cross the ocean to her colonies, studied the enlargement of her vessels, as well as their model, and soon attained a degree of excellence in the art of ship-building which placed her foremost among the nations of Europe for the magnitude and character of her ships, a position which she retained until her naval arm was broken in dire conflict with the unyielding Briton. England was so far behind the Peninsular nations in commercial enterprise at the commencement of the sixteenth century, that "the Galees commying from Vennes (Venice) to England be

commonly vij. moneths sailying and sometimes more; and grete difficultie to fynde any maryners able to take the rule and governance of the said shippes sailying into so jeopardous and ferre parties."

The "parent of the British navy" was built by the order of Henry VII., and cost £14,000. She was called "Henri Grace à Dieu." The masts were five in number, inclusive of the bowsprit, an usage which continued in "ships of the line" till nearly the end of the reign of King Charles I. They were made of one tree at first, but afterwards arranged in joints, or topmasts, as at the present day. This vessel could only venture to sea with fair winds and fine weather. Shortly after the construction of the "Henri Grace à Dieu," a great improvement in English vessels must have taken place, for we find Henry VIII. in possession of a fleet whose good qualities enabled the vessels composing it to "sail on a wind," or to beat to windward. In 1513 the novelty of performing this nautical feat was tested by the entire fleet, and a most satisfactory report was made by the "Lord Admiral" to King Henry VII., in these words: "This same was the best tryall that cowd be, for we went both slakying by a bowlyn, and a cool acros and abouet in such wyse that few shippes lakkyd no water in over the lee wales."

In 1545 it was reported to the king that the small vessels could "lye best by a wynde;" and in 1567 it is said that the feat of sailing "by the wind" was so far improved that there were "fore-and-aft" rigged vessels on the British seas, running as packets from England to Ireland. We think these were rigged as our *sloops*, with one mast, for we think there can be no doubt that the first *schooner*, or the "fore-and-aft" rig applied on two masts, was blt in New England. It is narrated that a fisherman having built a vessel of this rig, the first seen in America at least, a friend at the launching cried out as she glided forth upon the water, "Oh, how she schoons!" "A shooner let her be," added her builder, and thus the name was given to this useful and most practical rig, as it proved.

But the Northmen had crafts, long before the English, called lins, capable of sailing in oblique courses against the wind; yet it is doubtful whether the largest ships of any country were adapted to the use of the "bowline," for laying the sails so as to execute this manœuvre, prior to the year 1500. The utility of port-holes in war vessels was settled about this period. To show the low state of nautical skill in England, even in the middle of the sixteenth century, we may mention the raising of the "Mari Rose," which was "overset and lost" at Portsmouth. The attempt was to be madc, under royal direction, by an Italian, Symond, with "fifty Venyzian maryners, and ne Venyzian carpenter," having "60 Englisshe maryners to attende upon them." They did not succeed, however. Before this, James IV. of Scotland had tried his hand at building a monster ship, in the beginning of the sixteenth century. She was called the "Great Michael," and in size exceeded any ship

of her time. She was 240 feet long, and 36 feet wide "within the sides," "and ten feet thick in the sides," so that no cannon could go through her." Her extreme breadth must have been 56 feet. This great ship "cumbered Scot land to get her to sea," and took so much timber that, except Falkland, she wasted *all the woods in Fife* which were oak wood, with all the timber that was gotten out of Norway; for she was so strong, and of so great length and breadth, all the wrights of Scotland, yea, and many other strangers, were at her device, at the King's command, who wrought very busily on her; but it was a year and a day ere she was completed." "She bare many cannon—six on every side, with three great bassils, two behind in her dock and one before, with 300 shot of small artillery, that is to say, mysand and battered falcon, and quarter falcon, flings, pestilent serpentens, and double dogs, with hagtor and culvering, crosbows and handbows. She had 300 mariners to sail her, six score of gunners to use her artillery, and a thousand men of war," with officers.

Fifty years later, viz., in the middle of the sixteenth century, the Swedes built the leviathan of their country, called the "Megala." She was less in size than the Scottish ship, but was 168 feet long, and 43 feet wide, and carried 173 guns, 67 of which could be considered cannon, the remainder being merely swivels. She was burned in an action with the Danes, in 1564. But the credit of constructing mammoth ships of war, and maintaining large fleets about this period, and for many years later, must be awarded to the Spaniards and Portuguese; and the most skilful ship-builders were to be found in Italy, that old land of Art.

Henry VIII. of England founded the royal dock-yards of Woolwich, Deptford, and Chatham, and improved that of Portsmouth, and making use of Italian ship-builders, so fostered and improved the naval resources of Britain, that a foundation for her present naval strength was laid during his reign, which has never yet been undermined or shaken; yet none of his vessels exceeded 400 tons, and many were less than 80 tons burden.

The ships built for the royal navies of this period appear only to have been adapted for the lodgment of the soldiers and mariners, with their implements of war, and the necessary stores for navigation. The provisions were carried in an attendant vessel, called a "victualer," of which there was one attached to each large ship of war in the fleet. The hold was principally used for a "cook-room," and even so late as 1715 this inconvenient arrangement was not entirely given up. Sir Walter Raleigh wrote and spoke much upon the royal navy and sea service, and prevailed in the introduction of very many improvements in the British navy.

The enormous quantity of ballast which, with defective dimensions and immense top-hamper of these ships, was rendered necessary, and it being bulky, left but little room for stores. These discrepancies in the art of ship-building were confined to the naval branch, and wiser arrangements prevailed in vessels built for commerce.

Indeed, it would appear that awkwardness in design and manœuvre has ever been chiefly complained of "in the navy," and is as true of that service to-day as it was 200 years ago. The reason may be assigned thus: The design, construction, and equipment of war vessels are *regulated by fixed rules*, which are only changed after the lapse of years, and from period to period; hence the science of *naval* construction and equipment becomes dumb, blind, and motionless, and like country shoemaking, the art consists in pegging leather together, upon the same last, without change of fashion, till we are ashamed of our *understanding*, and of our *bark-mill* mechanism. The ever-varying efforts of hundreds and thousands of commercial ship-builders, mariners, and engineers to surpass their former efforts, and their neighbors, in the attainment of perfective skill, develop numerous improvements every year, to be immediately adopted upon the warrant of *utility*. No departmental regulation or *gouty rules* cripple the private builder. Success to him.

W. W. B.

COMPARATIVE RESULTS OBTAINED FROM THE SCREW AND PADDLE-WHEEL IN THE STEAMSHIPS "HIMALAYA" AND "ATRATO."

THE performance of these vessels affords a valuable opportunity for comparing the relative efficiency of the screw and paddle-wheel as applied to large ocean steamers; and particularly so, as they are, with one or two exceptions, the largest afloat, and approximate so closely to each other in size and speed. They are built of the same material, *iron;* commenced running in the same year and from the same port; and may be considered to offer, in all respects, a fair exposition of their respective systems of steam propulsion.

In one vessel, we have the direct-acting screw-engine of Messrs. Penn, simple, compact, and light; its screw propeller little more than 10 tons in weight, and yet fully equal to its task of transmitting the power of the engines for the propulsion of this huge ship.

On the other hand, there is the ponderous beam or side-lever engine, necessarily complex and bulky, with the feathering paddle-wheels, each probably weighing about 70 tons, and requiring enormous paddle-boxes and framing to support them.

In one case there are four screw-shaft bearings to look after and keep in order; in the other, 128 working parts requiring care and attention.

The first cost of the *Himalaya's* screw would be under £400; the feathering wheels of the *Atrato* would probably cost not less than £5,000.

We will now give, in a tabular form, some dimensions of the vessels and their machinery, speed at measured mile, &c.:—

VESSELS.	SCREW. *Himalaya.*	PADDLE. *Atrato.*
Built by	Mare, of Blackwall.	Cair Greenock.
Engines	Penn & Co.	Caird.
Launched	May 24, 1853.	Aprl 26, 1853.
Length between perpendiculars	340 ft. 6 in.	318 ft.
Ditto at load-line	336 ft. 6 in.	315 ft.
Breadth, extreme	46 ft. 1 in.	42 ft.
Depth from underside spar-deck to top keel	34 ft. 6 in.	36 ft.
Tonnage, B. M.	3,550 tons.	2,721 tons.
Tonnage, register	2,327 8-100 t's.	2,600 75-100 t's.
Stowage for coal	1,100 tons.	1,440 tons.

MACHINERY.	SCREW. *Himalaya.*	PADDLE. *Atrato.*
Nominal H. P. of engines	700.	900.
Diameter of cylinders (effective)	77¾ in.	96 in.
Stroke of pistons	3 ft. 6 in.	9 ft.
Cubic contents of both cylinders for one double stroke	462 cubic ft.	1,807 cub. ft.
Diameter of screw and of paddle-wheels	18 ft.	36 ft. 6 in.
Number of blades and of floats in each wheel	2.	15.
Length of screw and size of each float	4 ft. 8 in.	12ft.×4ft. 6in.
Pitch of screw (uniform) is 6 times its length, or	28 ft.	
Total surface in screw-blades and in all floats of both wheels		1,620 sq. ft.
Total number of boilers	4.	4.
Total length of ditto, fore and aft	43 ft. 6 in.	46 ft.
Breadth of ditto	9 ft. 3 in.	12 ft.
Depth of ditto	12 ft. 3 in.	18 ft. 9 in.
Number of furnaces	24.	24.
Width of each	2 ft. 10 in.	3 ft. 3 in.
Length of fire-bars	7 ft.	7 ft.
Total area of fire-grate	475 sq. ft.	546 sq. ft.
Total heating-surface in boilers	10,910 sq. ft.	16,640 sq. ft.
Total steam space	2591 cub. ft.	2,800 cub. ft.
Number of chimneys	1.	2.
Diameter of each	8 ft.	6 ft. 8 in.
Area of chimneys, total	50¼ sq. ft.	70 sq. ft.
Pressure of steam in boilers	14 lbs.	17 lbs.

TRIALS AT MEASURED MILE IN STROKES' BAY.

Date of trial	Jan. 13, 1854.	Mar. 10, 1854.
Draught of water, forward and aft	15 ft. 3. in. frd. 18 ft. 3 in. aft.	16 ft. 4 in. frd. 10 ft. 8 in. aft.
Ditto, mean	16 ft. 9 in.	16 ft. 6 in.
Coal on board	700 tons.	290 tons.
Speed of vessel in knots per hour (mean of several runs).	13.78 knots.	13.97 knots.
Ditto in statute miles (ditto)	15.87 miles.	16.08 miles.
Immersed midship section	560 sq. ft.	544 sq. ft.
Displacement	3,220 tons.	3,070 tons.
Revolutions of engines (mean)	59.	18½
Gross indicated H. P. (mean of all runs)	2,050.	3,070.
Coefficient of I. M. S., or speed in knots per hour cubed × I. M. S. ÷ indicated H. P.	716.	494.
Coefficient displacement or speed in knots per hour cubed × cube-root of square of displacement ÷ indicated H.P.	279.	171.
Slip of screw per cent	15.	
Ditto of paddles, taking axes of floats as centre of pressure		23.

The extraordinary fact which presses itself on our notice from the foregoing details of trials, consists, as it appears to us, in the difference of power required in the two vessels to produce a nearly identical speed. They are both built for the highest speed, and have fine lines, both in the forward and after bodies, the run of the *Himalaya* being longer and cleaner than the other, to suit the screw-propeller; and we must also remark that the *Atrato* had not been docked for some time previous to her trial, which was not the case with the *Himalaya.* But these circumstances will not by any means account for the *fact*, that 2,050 H. P., economised by the screw, propelled the *Himalaya* at about the same speed as 3,016 H. P., transmitted by paddles, propelled the *Atrato.* And the question naturally arises—By what means was the difference, or 966 H. P. absorbed or expended in the paddle steamer? And to this question we invite the earnest attention of our readers, for on its solution depends the extension of our knowledge of the screw propeller, of the true nature of the action of which so little is thoroughly understood, as it in the practice so often presents us with apparently anomalous results, and the value of which as a propeller for large ocean steamers (at any rate) has never been more prominent than in the example we have described.—*Lond. Artizan.*

We are glad to know that efforts are being made to test the comparative merits of the screw and paddle-wheel, but such as that of the *Himalaya* and *Atrato* we regard as being of little avail in the determination of this important problem beyond its financial bearings. In this case the screw vessel had a very decided advantage both in her size and in the proportionate dimensions of the hull. We find the *Atrato* had but 1.54 more depth than the *Himalaya*, notwithstanding she had 4.08 feet less breadth and 21.5 feet less length, (which excess is most likely in the midship body). Were the depth of the Atrato in the same ratio of reduced size of the vessel, there would appear a difference of 4.34 feet in the depth of the two vessels; in other words, the Atrato has 4.34 feet more depth than the Himalaya. It is quite common on both sides of the Atlantic, for engineers to furnish an analysis of the merits of one kind of engine, or one mode of propulsion over another mode, not regarding the question of shape in the vessel as being at all important in securing the correctness of the data, and taking it for granted, that if the displacement of the rival vessel bear a proper proportion to the power applied, it is quite sufficient, whereas nothing can be more absurd. It is quite as much of a test of model as of the mode of propulsion.—Eds.

THE PROPERTIES AND EFFECTS OF STEAM.

Although much has been said and written about steam, yet, owing to its wide application on steamships and railroads, in factories and mills, events are continually transpiring to bring it before the public in some new phase, or in some old one clothed in a new dress. When we take it into consideration that there are tens of thousands of steam-engines in daily use, any old scientific fact, not very widely known, or any new fact brought to light, or any common error connected with steam pointed out, must be of interest to a very large number of persons.

For many years we have entertained the opinion that at least eight-tenths of the accidents caused by steam boiler explosions might be set down under the terms *carelessness, ignorance, and defects of boiler*; but a correspondent of the Dayton *Gazette*, (Ohio,) entertains queer notions respecting explosions, believing they are caused by some mysterious agent, and denies that steam explosions take place "from defects of boiler, or carelessness, or ignorance of those entrusted with their management." Let us endeavor to explode such negative views by positive proof. The steamer *Pearl* exploded her boiler on the 27th of January, 1855, at Marysville, on the Sacramento river, California, by which eighty persons lost their lives—three times more than were lost by all the other steamboat explosions which took place last year. The report of the Inspectors on this case says, "this accident was investigated *most fully*, and the decision was, it was caused by *carelessness* or recklessness of the engineer, and he absconded after the accident." On the 30th of June last year, the steamer *Lexington* exploded her boilers on the Ohio river, and although the cause of the disaster was not fully substantiated, the Inspector's report states, that "from the testimony obtained, the cause was an inadequate supply of water in the boilers,"—another case, no doubt, of ignorance or carelessness. The steamer *Oregon* exploded on the Detroit river, on the 20th of April last, and respecting the cause of this, the Inspector's report says, "from such information as could be elicited the Board came to the conclusion that it was caused by the failure of the supply pumps, and consequent want of water in the boiler,"—another case, no doubt, of carelessness or ignorance. On the 7th of July last, the boiler of the steamer *J. Brooks* exploded on Lake Erie, near Ashtabula, by which three lives were lost. The report of the Inspectors in relation to it, states the pressure of steam at the time of the accident to be less than allowed by certificate, and the water at the proper height in the boiler, but "the Board decided that the accident was caused by a defect in the braces of the crown of the furnace." Thus, of the four explosions of boilers which took place last year on licensed steamers, three were undoubtedly caused by carelessness or ignorance on the part of those managing the boilers, and the fourth was caused by a defect in the boiler.

Many more accidents would have taken place from the defects of boilers only for the rigid inspection to which they were submitted. The Inspectors' report alluded to, says, on page 12, " defects have been disclosed by the very process of inspection, which, without such discovery, would have, undoubtedly, resulted in terrible accidents, involving loss of life and property." This testimony, from such high authority, confirms us more and more in the views we have hitherto entertained respecting the cause of steam explosions.

The science of steam is not so simple, nor so very generally and profoundly understood as some suppose. There are some very curious phenomena connected with water and steam, ignorance of which has no doubt led to the explosions of boilers, by those who had them in charge. Thus, water deprived entirely of atmospheric air can be quietly heated far above 212 degrees, the boiling point of water, without generating steam, and it can be made to explode at a high heat with fearful violence. Steam in contact with water in a quiescent state, may be heated up to 500 degrees, or upwards, without a corresponding effect on the steam gauge. A boiler in such a condition, by the agitation of the water, through a stroke of the pump or opening of a valve, instantaneously developes a terrible force, by the superheated steam lapping up the water, and expanding immensely by becoming saturated steam. In the experiments made some years since by the Franklin Institute, steam was heated to 533 degrees, while the pressure on the gauge was only 103 lbs., whereas it should have been 900 lbs. It is many years since Jacob Perkins made this discovery in relation to superheated steam, and he advanced it as the cause of very violent boiler explosions, and no doubt he was right.

In England there is an " Association for the prevention of steam boiler explosions," which numbers among its members the ablest engineers in that country. Their first annual meeting was held last November, but the yearly report has but recently been published. The Chief Inspector of the Association, in his report, says, " the deficiency of water is evidently the most frequent cause of explosions." He also mentions the case of a boiler that contained water and steam, the latter only indicating 8 lbs. pressure on the gauge, and yet it was heated so high that the upper part of the furnaces above the water line became red hot, and a block of wood on the top of the boiler was charred black. " From this it is evident," the report says, " that steam may be raised to a high temperature while in contact with water, and yet remain at a low pressure. This condition can only arise from the deficiency of water in the steam, and we may reasonably infer, that if this could by any means be supplied, we should have an almost instantaneous increase of density and pressure proportionate to the degree of saturation. This will fully account for the difference in intensity of many explosions, and why these should so often occur immediately after starting the engine."

Persons ignorant of these phenomena connected with steam, may, no doubt,

be ready to attribute very violent explosions to some mysterious agency—electricity, or some invisible ether. Intelligent engineers, however, know how to obviate explosions arising from unsaturated steam, by keeping the water in their engine boilers continually in agitation.

We have been thus particular in presenting the foregoing information relative to the nature and effects of steam, in order that ignorance of the causes of boiler explosions may never be held up as an excuse for defects of boilers; or carelessness, or recklessness on the part of those having them in charge.—*Scientific American.*

SHIP STOCK MARKET.

Southern pine by the cargo, as follows:—

Large hewn timber, $28 to $32 per M. feet., Small, do $18 to $21 per M. ft.

Ship stuff, sawn to order, southern pine, $26 to $28 per M. feet.

Rough edged plank, southern pine, $24 to $26 per M. feet.

Promiscuous sawn stuff, southern pine, $20 to $23 per M. feet.

Western pine, deck plank, No. 1 and 2, $30 to $34 per M. feet.

Eastern, do. No. 2, 3½ by 6 in., $24 per M. feet.

Eastern, do. No. 3, 3 by 6 in., $20 per. M. feet.

Western pine, do. Pennsylvania, or western by the cargo, $29 to $35 per M. feet.

Oak ship plank, No. 1 and 2, $35 to $40 per M. feet.

Do. stocks, $18 to $21 per ton.

Rough moulded oak, $16 to $17 per ton.

Promiscuous oak, $15 to $17 per ton.

Oak ship knees, as last quoted.

Hackmatack, do. (Boston Inspect.) by the cargo, 7 in., sided at 40 cents per inch.

8 do. at 50 to 60 cents per inch.

By the piece, (Boston Inspec.,) 4 inch, 50 cts. 5 do. $1,00. 6 do. $2,00.

7 do. $3,00. 8 do. $4,00. 9 inch, $5,00. 10 do. $6,00. 11 do. $7,00. 12 do. $8,00. Sales limited.

Spruce knees when in market, $1,75 to $2,00 for 8 inch sided.

Eastern hard wood keel pieces, $15 to $22 per ton.

Lower futtocks and eastern ship plank, market bare.

Eastern and western mast timber, $18 to $20; mast timber measurement.

Slow sales. Medium size, long lengths, are mostly wanted.

DISASTERS AT SEA.

STEAMERS.

George Collier, lying at her whart, at Memphis, Tenn., Dec. 2d, caught fire, burned to the water edge.
Mayflower, at Memphis, Tenn., Dec. 2d, caught fire, burned to the water's edge.
Young America, sank Dec. 9th, on the Mississippi River, ten miles above St. Louis.
James Paul, sprang aleak and sunk in the Washington River, at Palestine, Ill., prior to Dec. 14th.
Michigan, Buffalo for Detroit, damaged wheel, Dec. 9, and returned to port.
Empire, came in contact with a sunken vessel, on the Alabama River, Dec. 6th, sunk immediately.
Ophelia, was driven ashore on the Ohio River, Dec. 9, opposite Louisville, Ky.
John Counter, from Quebec, Canada, driven ashore in St. Croix Bay, in a gale prior to Dec. 6th.
Toledo, (Prop,) from Toledo, lost rudder and sprung aleak at Cleveland, Ohio, Dec. 10.
Seminole, at Jacksonville, Fla., Dec. 20th, burned to the water's edge.
Unicorn, for New-Orleans, destroyed by fire Dec. 10th, on the Mississippi River.
Southerner, St. Louis for Louisville, broke her machinery prior to Dec. 24.
Charleston, burned to water's edge and sunk on the Ohio River, prior to Dec. 28th.
Cora, blown on the bar below Vicksburg, Miss., during a gale, Dec. 8th.
N. W. Graham, from Vicksburg. Miss., disabled near Baton Rouge, La., prior to Dec. 27.
Odd Fellow, was totally lost on the Cumberland River, prior to Dec. 29th.
A. L. Davis, struck a snag in the Cumberland River, causing a leak, prior to Dec. 29th.
Crescent City, New-York for New-Orleans, was wrecked on Bahama Reefs.
C. Vanderbilt, Stonington, for New-York, went ashore on the rocks at Ward's Island, Dec. 18.
City of New-York, Philadelphia, for Boston, lost deck-load, Dec. 10.
Richard Willing, Baltimoré for Philadelphia, badly damaged in collision with steamer Eagle, Dec. 8.
Eagle, (tug) was slightly damaged in collision with propellor Richard Willing.
Henry Wells, while proceeding up the Magdalena River, prior to Dec. 3d, was snagged.

SHIPS.

Guiding Star, Liverpool, Eng., for Melbourne, Aust., with 500 passengers, supposed to be lost.
Catharine Green, Quebec, Canada, for Shields, Eng., in collision with a vessel prior to Nov. 18, and lost jibboom, &c.
Malakoff, Quebec, Canada, for Liverpool, Eng., put into Sydney prior to Nov. 28th, with loss of sails.
Sea Queen, New-Orleans, La., for Havre, Fr., put into Savannah, Geo., Dec. 25, in distress.
United States, Newport, W., for Mobile, Ala., went ashore on the Point below Mobile, prior to Jan. 7th.
Fortitude, (Am.) Smyrna, Asia, for New-York, put into Gibraltar, Spain, Dec. 4, leaky.
Buena Vista, Trapani for Savannah, went ashore at the entrance of the St. Catharine Sound.
Kate Hunter, Liverpool for Philadelphia, split sails, broke spars, &c. in a gale, prior to Dec. 30th.
Timor, New-Orleans, La., for Boston, Mass., went ashore near Bass Rip, Dec. 4, off Nantucket.
Charlotte, San Francisco, Cal., for Valparaiso, was wrecked on the coast of Manta, Equador, Sept. 29.
Leodes, which sailed from Port Philip, Australia, Sept. 18, put back 19th, with loss of fore-top-gallant-mast, &c.
Samuel Train, Lisbon for Rio Grande, S. A., put into Rio Janeiro, S. A., Nov. 14th, dismasted.
Medara, Lisbon for Boston, sprung aleak Nov. 20.
Tony, New-York for Dordt, put into Falmouth, Eng., Nov. 10th, leaky.
Siam, (Br.), from Liverpool, went ashore in St. Catharine's Sound, Dec. 26.
Cairo, Callao, S. A., for Baltimore, Md., lost top-gallant-masts, &c., prior to Oct. 17.
Fanny Forsyth, Liverpool for Bombay, was dismasted in a gale, Oct. 14.
St. Lawrence, Newcastle, N. S. W., for San Francisco, Cal., sprung aleak and sunk off Roratonga, July 30.
Megunticook, Philadelphia for San Francisco, Cal., lost spars and sails, prior to Oct. 22.
Hornet, New-York for San Francisco, Cal., lost bulwarks, &c., prior to Sept. 22.
Good Hope, New-York for San Francisco, Cal., lost jib-boom, &c., prior to Oct. 12.
Five unknown vessels were sunk by a water spout, at Tunis, Africa, Nov. 18.
Unknown, was seen ashore on the reef east of Key West, Nov. 24, with top-gallant-masts gone
Matilda, Newcastle, Eng., for New-York, lost bulwarks, sails, &c., prior to Dec. 14th.
Wm. B. Travis, New-York for Galveston, went ashore near Galveston, Dec. 5th.
Lucan, (Fr.), Laguna for Marseilles, put into New-Orleans, Dec. 7, in distress.

Constitution, from New-York, was totally lost by fire in the Mersey River, Eng., Dec. 4.
Unknown, went ashore on Muskeget Island, prior to Dec. 12th.
Tejuca, Bahia for New-York, sprung fore and fore-top-sail yard, and fore-mast, split sails, &c., prior to Nov. 8.
William Doane, Philadelphia for Bremen, was thrown on her beam ends and abandoned, Dec. 5.
Elizabeth Ellen, Chincha Islands for U. States, put into Valparaiso, Oct. 20, in distress.
Lady Arabella, New-Orleans for Bordeaux, put into Key West, Fla., prior to Nov. 30th, leaky.
Spitfire, from Foo-chow-Foo, China, put into St. Helena, leaky, Oct. 8.
Adelaide, Leghorn for New-York, lost main-top-mast and top-gallant masts by lightning, Oct. 20.
Wild Pigeon, Foo-chow-Foo, China, for London, sprung fore and main-masts and sprung aleak prior to Dec. 6.
Bustamente, for San Francisco, Cal , lost bowsprit, sails, &c. off Isle of Formosa.
Rocket, San Francisco, Cal., for Hong Kong, lost some spars and sails by lightning, Sept. 4.
John Wade, Ningpo for Hong Kong, sprung aleak, Sept. 25, off Lama Island.
Gen. Dunlap, Liverpool for New-Orleans, lost fore-top-gallant mast, &c., by lightning, Nov. 22.
H. H. Boody, Leghorn for New-York, lost jib-boom, &c , in collision with barque Caroline, prior to Dec. 29.
Ontario, Boston for Charleston, cut away main and mizzen masts, Dec. 9.
Calcutta, New-Orleans for Boston, lost part of deck load, Nov. 30.
Trimountain, in contact with ship Humboldt in Boston harbor, Dec. 17, lost jib-boom, cut-water, &c.
Humboldt, in contact with ship Trimountain, lost mizzen-top-gallant mast, &c.
Sophia Walker, Pedang for New-York, put into St. Helena, prior to Dec. 29th, leaky.
Dundonald, mizzen-masts and rigging were destroyed by fire, at London, Eng., Nov. 15.
Unknown, was seen off Provincetown, Dec. 8, with top-gallant masts gone.
R. Robinson, Liverpool for New-York, lost spars, sails, &c., Dec. 7.
Lizzie Harward, Havre for New-York, lost sails, stove bulwarks, &c., prior to Dec. 21st.
Vision, from Aberdeen, went ashore on Nantucket South Shoals, Dec. 17.
Louis Napoleon, Hamburg for New-York, lost sails, started cutwater, &c., prior to Dec. 21st.
Unknown, was passed Nov. 6, lat. 45 20 N., lon. 42 37 W., with nothing standing but bowsprit.
Unknown vessel was passed Nov. 6, lat. 49 N., lon. 11 W., bottom up.
Mereeds, San Francisco for Sydney, lost main-mast, fore-top-gallant mast, mizzen mast, &c., Aug. 4.
Concordia, Mobile for Liverpool, caught fire, Nov. 25, was ran ashore and consumed.
Matilda, considerably damaged by fire, Dec. 21st, while at New-York.
John Currier, Liverpool for New-York, stove bulwarks, &c., prior to Dec. 18th.
Phantom, (Br.) totally lost just after leaving Caldera, Oct. 19.
Dreadnought, Liverpool for New-York, lost spars and sails, prior to Dec. 14th.
Lucy Thompson, Liverpool for New-York, split sails, &c., prior to Dec. 16.

BARQUES.

Watson, Quebec for Newcastle, lost sails, bulwarks, mizzen mast, &c., in a gale, off Prince Edwards Island, Nov. 21.
Unknown, was passed Oct. 26, lat. 48 07 N., lon. 42 32 W., water-logged and abandoned.
London, St. Catharine's for Oswego, N. Y., put into Kingston, Nov. 10, in distress.
Arcada, (Am), was in collision with barque Rover, off San Francisco, Nov. 10, returned to San Francisco, for repairs.
Helen Mar, New-York for Belfast, Ireland, returned to port Dec. 25, with loss of main mast, &c.
Tammany, New-Orleans, La. for Boston, Mass., ashore on the flats at Holmes' Hole, Dec. 6.
Emma Cushing, New-Orleans, La. for Boston, Mass., ashore on the flats at Holmes' Hole, Dec. 6
Warren Hallett, badly damaged in collision with schr. R. H. Moulton, Dec. 6, at Holmes Hole.
Peri, Havana for Portland, Me , lost part of deck load, in gale, prior to Dec. 7.
Peacock, Salem for Zanzibar, Africa, wrecked near Majunga, Madagascar, Aug. 6.
Isabella, Smyrna, Asia, for Boston, totally lost, Nov. 11, on Cape Spartel, Med.
Angeline B. Sturgis, Jacksonville, Fla. for San Juan del Norte, Nic , struck reef near St. Andres, prior to Nov. 29.
Robert Pennell, New-Bedford for Cardenas, struck on Currituck Shoals, Dec. 10.
Greyhound, New-Orleans, La. for Rio Janeiro, S. A., in coll ision with brig Ioven Elize, prior t Dec. 10, and returned to port.
Nautilus, Smyrna for Boston, was abandoned at sea, Dec. 4.
Mary, (Br,), Honduras for London, went ashore on Loo Key, Dec. 7.
Imaum, Penang for Salem, had bulwarks stove, &c., prior to Dec. 11.
Unknown, was passed Nov. 5, lat. 49 24 N., lon. 39 W., abandoned, fore and main mast gone.
New-Orleans, (Bre.), New-Orleans for Bremen, returned to former port in distress, Dec. 5.
Nashua, Boston for Philadelphia, hove down and lost bulwarks, sails, &c., Nov. 29.
John Payson, New-Orleans for Boston, put into New-London, Dec. 10, in distress.
A. B. Sturges, Jacksonville for San Juan del Norte, struck on a reef, near St. Andres, Oct. 27, is a total loss.

BRIGS.

Empire State, put into Milwaukie, Wis., Dec. 9th, having sprung aleak in a gale,
E. D. Wolf, while at Monterey, Cal., Nov. 2, slipped anchor and drifted ashore.
Unknown, was passed Nov. 17, lat. 43 34 N., lon. 51½ W., water-logged and abandoned.
Cortland, in entering Chicago harbor, Dec. 11, struck the bar and sprung aleak.
Portland, Calais, Me., Providence, R. I., put into Chatham, Mass., Dec. 9, leaky.
Tyrant, Charleston, S. C. for Baltimore, Md., went ashore on Thomas' Point, Md., prior to Dec. 10.
Isaiah, while at Jacksonville, Dec. 20th, was damaged by fire.
George D. Abbott, New Orleans, La. for Savannah, Ga., in collision with ship John Howell, Dec. 7, is a total loss.
M H. Comery, Charleston, S. C. for Rio Janeiro, put into Pernambuco in distress, Nov. 24.
Virginia, Boston for Virginia, went ashore at Holmes' Hole, Dec. 6.
Lion, Bangor, Me. for Havana, sprung aleak Nov. 30, lost deck load, and put into Nassau, N. P., Dec. 14.
Atlantic St. Domingo for Boston, lost on Long Island, Bahamas, prior to Dec. 13.
W. D. Shurtz, St. John, N B. for Philadelphia, lost part of deck load, during gale, Nov. 28.
Mary Cobb, Dix Island, Me. for Charleston, S. C., lost main boom, &c., sprung aleak, during gale, Nov. 28.
Grace Douglass, (Br.), for Liverpool, went ashore at Cutler, Me., Dec. 9.
Gen. Pierce, Monrovia, Liberia for New-York, sprung aleak prior to Oct. 19th.
Susan Small, St. Jago de Cuba for New-York, lost sails, &c., prior to Dec. 19.
Warren Brown, Bluehill, Me. for Norfolk, sprung aleak, Nov. 29, during a gale, and was abandoned.
Hayward, left Miffon for Sierra Leone, Aug. 4, leaking badly.
Friendship, Harrington, Me. for New-York, sprung aleak, Dec. 6, off Sandy Hook, and put into Newport.
Pokonoket, Savannah for Boston, went ashore, Dec. 9, in Narraganset Bay, between Dutch Island and Beaver Tail Light.
J. D. Pennell, Baltimore for Essex, Mass., put into Dutch Island harbor, R. I., Dec. 9, with oss of sails, &c.
Globe, Marseilles, Fr. for New-York, in collision with French ship Lacomi off Cape de Polos, Sp. Nov. 18, was badly damaged.
Braganza, New-Bedford for Virginia, sprung aleak, Dec. 10, and in getting back to Newport, went ashore at Wainscott, 15th.
Isabella, Apalachicola for Providence, went ashore at Bay Honda Key, Dec. 8th.
W. H. Parks, St. Johns, N. F. for Boston, in a gale Nov. 23, was thrown on her beam ends, lost fore-top-mast, &c.
Amos M. Roberts, New-Orleans for Boston, struck on South Shoal and sprang aleak, Dec. 7.
Rineo, Apalachicola for Boston, sprang aleak, Dec. 7, threw overboard part of cargo.
Cosmopolite, Surinam for Salem, struck on Skiff's Island Reef, Wood's Hole, Dec. 8, lost mainmast, &c.
Ioven Elize, (Sp), New-Orleans for Santander, in collision with barque Greyhound, prior to Dec. 11, and returned to port.
David Duffel, Boston for Smyrna, put into Salem, Mass., Dec. 15, leaky, &c.
Tyrone, Georgetown, S. C. for Baltimore, ashore at Thomas's Point, prior to Dec. 7.
Harp, Wilmington, N. C. for Guadaloupe, put back to former port, Dec. 6, leaky.
Isadora, from New-York, arrived at Rouen, Nov. 13, with loss of some spars, &c.
Maida, arrived at Montevideo, Oct. 1st, from Boston, same night went ashore and is a total loss.
Xenophon, Savannah for Boston, carried away main yard, split sails, &c., in a gale, Nov. 27.
Isabella Beurman, Sagua for Boston, put into Holmes' Hole, prior to Dec. 3, with sails split, &c.
Trekton, Georgetown, S. C. for Newburyport, put into Holmes' Hole, Dec. 17, with sails, boats lost, &c.
Elmira, Philadelphia for Boston, in collision with unknown schr. off Absecom Inlet, Dec. 7, and put back to former port.
Sampson, New-York for Key West, went ashore on Crawfish Heads, Fla., Nov. 30.
Mechanic, Machias, Me. for Boston, put into Boothbay, Me., Dec. 10, with loss of sails, part of deck load, and leaky.
Black Swan, Great Harbor, Bahamas, for New-York, lost fore and main-top-gallant masts, in a gale, Dec. 11.
E. Baldwin, Savannah for Bath, Me., put into Edgartown, Dec. 11, with loss of deck load.
Kate Pendergrass, (Br.) Turks Island for New-York, stove bulwarks, &c., in collision with an unknown sloop, in New-York Bay.

SCHOONERS.

Caroline, Port Credit for Oswego, N. Y., lost fore boom and gaff, ran for a harbor, Dec. 10th.
H. Norton, went ashore at Milwaukie, Wis., Dec. 9th.
Blue Belle, from Grand Haven, Mich., went ashore near White Lake, Dec. 4th, 5 hands lost.

Hollowell, was totally lost on the Lakes, Dec. 2d.
Whirlwind, went ashore on Lake Michigan, at Racine, Wis., Dec. 9th.
Mary Y. Bonesteel, in attempting to enter harbor of Chicago, Dec. 10, ran ashore on bar.
Unknown, in collision with steamer New World, off San Francisco harbor, Nov. 19, lost bowsprit, &c.
Sarah Jane, Montreal, Canada for Halifax, N. S., totally lost a few miles north of Port Hood, C. B.
Advance, went ashore on Lake Michigan, near Michigan City, Dec. 9th.
Lewis Irwin, went ashore on Lake Michigan, near Michigan City, Dec. 10th.
Vermont, ran ashore near Grand Haven, Mich., Dec. 9, total loss.
Velocity, for Sandusky, lost anchors, &c., near Long Point, Lake Erie.
Phœnix, from Toronto, all hands with vessel supposed to be lost, sailed Nov. 13.
North Yuba, went ashore on Lake Huron, near White Lake, Dec. 5, 1 life lost.
Canopus, was totally lost on Lake Huron, about Dec. 23, all hands supposed to be lost.
Supposed to be Gen. Veazie, Jacmel for Boston, went ashore at Bass River Breakwater, prior to Dec. 11.
Ellen, went ashore at Bass River Breakwater, prior to Dec. 10.
Sirocco, Montreal for Miramachi, wrecked on the Manicongan Shoals, Nov. 13.
R. H. Bray, for Jacksonville, Fla., capsized Dec. 15, and abandoned 16th, 1 life lost.
Arcturus, New-York for Boston, while at Holmes' Hole, Dec. 6, was in contact with schr. Ariadne, and drifted ashore.
Ariadne, New-York for Salem, while at Holmes' Hole, Dec. 6, was in contact with schr. Arcturus, and drifted ashore.
Mary, (Br.), Providence, R. I. for St. John, N. B., went ashore Dec. 6.
R. H. Moulton, Georgetown, S. C. for Boston, in contact with a barque at Holmes' Hole, Dec. 6, badly damaged.
Jane, St. Thomas for Baltimore, Md., put into Nassau, N. P., leaky, prior to Dec. 20th.
George Savery, Jacksonville, Fla. for Boston, ashore in Barnstable Bay, Jan. 6.
Don Nicholas, Portland, Me. for Richmond, Va., in collision with schr. Wm. Clark, Dec. 27, and sunk.
John Bell, Rockland, Me. for Va., put into Edgartown, Dec. 11, lost jib-boom, chain and anchor.
Leonard McKenzie, Norfolk for Providence, in collision with unknown schr., Nov. 29, badly damaged.
Enterprise, Bangor, Me. for Salem, Mass., put into Gloucester, Mass., Nov. 30, lost part of deck load.
Henry, Bangor, Me. for Boston, capsized in a squall, Nov. 28, and lost main-mast.
Lane, from St. Johns, N. F., went ashore near Pictou, N. S., prior to Dec. 7.
Moonlight, Mobile for New-York, went ashore on Fire Island, Dec. 4.
Exchange, Baltimore, Md. for Wilmington, N. C., went ashore on New Inlet Bar, Dec. 3d.
Unknown, in collision with schr. Leonard McKenzie, off Long Island, Nov. 27, badly damaged.
Unknown, also went ashore in Newport harbor, Dec. 5th.
Ellwood Walter, (Pilot-boat, No. 7,) in contact with an unknown schr., Dec. 14, near Sandy Hook. lost bow-sprit, &c.
Cohannet, at Provincetown, Dec. 9, in contact with schr. David Lombard and lost bow-sprit, &c.
Unknown, in collision with Pilot-boat Ellwood Walter, Dec. 12, and lost jib-boom, cutwater, &c,
Huntress, for Boston, Mass., in collision with unknown brig, Dec. 11, and put into Cutler, Me.
Mary Burns, Providence, R. I. for Fire Island, in collision with a propeller, Dec. 12, and put into New-London, Conn.
George Harris, Charleston, S. C. for Philadelphia, Pa., lost bulwarks, boat, &c., in a gale, Dec. 9.
S. Waterman, O'Kalee for Charleston, lost part of deck load, boat, &c., in a gale, prior to Dec. 13.
Albicore, at Rockport, Me., Dec. 9, badly damaged in a gale and sunk.
Vulcan, (Br.), Boston for Yarmouth, N. S., driven ashore near the latter port, Nov. 24.
Saxe Gotha, P. E. Island for Boston, sank in St. Andrews' Channel, near Canso, prior to Dec. 2d.
Woodruff, Boston for Philadelphia, lost some sails in a gale, off Sandy Hook, Nov. 29.
Grace Caroline, Boston for Fairhaven, put into Provincetown with loss of both masts.
Gov. Arnold, broke adrift and went ashore at East Machias, Me., Dec. 9.
Mobile, New-York for Mobile, went ashore on Elbow Reef, near Great Guano Keys, prior to Dec. 12.
Ingomar, Surinam for Boston, put into Newport, Dec. 18th, in distress.
Ocean Star, Camden for Norfolk, put into Fall River, Dec. 15, in distress.
Mary Fletcher, Eastport for Philadelphia, sprung a leak, split sails, &c., in a gale, Dec. 9.
Baltic, Machias, Me. for New-York, put into Portland, Dec. 17, in distress.
Dispatch, New-York for Philadelphia, went ashore on Barnegat Shoals, Dec. 19.
Jane Prindle, broke adrift and went ashore at Tarpaulin Cove, Dec. 8.
R. B. Pitts, Rockland for New-York, put into Tarpaulin Cove, Dec. 9, dragged and went ashore.
Isabella, Boston for New-York, ashore on Lovell's Island, prior to Dec. 12th.
Horace Nichols, Philadelphia for Boston, went ashore on the Sow and Pigs Ledge, Dec. 11.

Isaac Achorn, Rockland for New-York, put into Edgartown, Dec. 13, loss of main-boom, gaff, &c.
H. R. Roberts, Charleston, S. C. for Georgetown, put back to former port, Dec. 12, with loss of fore-top-mast, jib-boom, &c.
Lioness, Digby for Boston, went ashore at Gloucester, Mass., Dec. 9th.
Northern Eagle, Bucksport for Norfolk, went ashore at Wood End bar, off Provincetown, Dec. 14.
Uranus, while at Searsport, Dec. 9, was stove to pieces, in a gale.
Laurel, while at Rockport, Me., Dec. 9, was badly damaged in a gale.
Hope, Portland, Me., for Boston, put into Cape Porpoise harbor, Me., and same night went ashore.
Wm. Penn, from Aspinwall, sprung aleak during gale, Dec. 10, and put into Havana, 11th.
John Elliott, Gonaives for Boston, lost deck load during gale, Dec. 9, and put into Holmes' Hole, 15th.
I. W. Faulklin, New-York for Boston, lost boat and part of deck load, in a gale, Dec. 9.
Signal, Kennebunk, Me. for Baltimore, Md , damaged cargo, lost jib, &c., prior to Dec. 20.
Byzantium, from Augusta, Me., arrived at Norfolk, Dec. 15, leaking,with loss of sails, rigging, &c.
Margaret, (Br.) Maitland, N. S. for Portland, capsized in the Bay of Fundy, prior to Dec. 16, all hands except the captain lost.
James Rose, from Charleston, arrived at Malaga, Oct. 24, loss of part of deck load.
Francis J. Cummings, Georgetown, S. C. for Boston, arrived at Edgartown, Nov. 28, with loss of fore-top-mast, &c.
Lewis Perry, St. Johns, N. F. for Boston, had decks swept and sails split, in a gale,Nov. 25.
Unknown, was seen at anchor off Smith's Island, Chesapeake Bay, Nov. 30, with fore-mast and main-top-mast gone.
St. Stephen, Calais, Me. for New-York, put into Boothbay, Me., Dec. 10, with loss of part of deck load, &c.
Washington, (pilot-boat) lost bow-sprit near the Highlands, Dec. 7.
Wm. H. Titcomb, New-Orleans for Boston, put into Newport, Nov. 29, with loss of sails, &c.
R. L. & A. Stuart, Baltimore for Bath, Me., went ashore on Matana Island, Dec. 2.
John Hart, from Long Island, Bahamas, ran ashore at New Inlet, L. I., Dec. 10.
Unknown, (sloop), was in collision with a steamer in New-York harbor, Dec. 21st, and sunk.
Franklin, from Bank Quereau, arrived at Beverly, Dec. 18, with sails split, anchor and chains lost, &c.
I. W., New-York for Boston, lost small boat and part of deck load, in a gale, Dec. 9.
Flying Arrow, from New-Orleans, arrived at New-York, in distress, Dec. 1st.
Flying Dragon, New-Oleans for Boston, went ashore near Plymouth Light, Dec. 16.
George Engs, Philadelphia for Boston, was in collision with steamer City of New-York, Dec. 1. and sank.
Unknown, went ashore on Coney Island, Dec. 9th.
Almatia, Richmond for Boston, was abandoned, Dec. 12.
Jenny Lind, Pensacola for New-Orleans, went ashore on Ship Island, Dec. 6.
Unknown, went ashore in the Delaware River, prior to Dec. 16.

SALES OF VESSELS.

One-half of ship Atlas, 700 tons, built at Boston, 1843, at auction, Dec. 12, for $12,300 cash.
Barque Marion, 360 tons, 6 years old, built at Thomaston, Me., for $10,500.
Pilot boat Moses H. Grinnell, sold Dec. 12, for $3,100.
Ship Goddess, (New) 1000 tons, was chartered for a voyage to San Francisco, India, and home, for $55,000.
A brig 250 tons, 2½ years old, at Boston, for $5,500 cash.
Bark Storm King, (New) 371 tons, sold Dec. 24, for $19,000.
Steamer Tennessee, sold for a line between Laguayra & New-York, for $72,500.
Brig Wizard, 190 tons, at Boston, for about $7,000.
Ship Sebago, 1258 tons, 1 year old, built at Portland, sold for $70,000.
Barque Meaco, 313 tons, built at Pembroke, Me., for $14,000 cash.
Barque Arethusa of Barnstable, 320 tons, 17 years old, for $6,500.
Ship Sea Lion, at Charleston, S. C., Dec. 11, by auction, $3,400.
Ship Sharon of Tapsham, at Liverpool, for $16,250, one-half cash, 4 months.
Propeller Columbus, 500 tons, built in 1848, sold at Panama, for $50,000.
Barque Garland, 280 tons, built at Eastport, Me., 1847, sold for $7,000.
Barque Weather Gague, 3 years old, built at Sag Harbor, L. I., $26,000 cash.
Ship Amos Lawrence, (New) built by D. McKay, East Boston, 1400 tons register, for $76,000 cash.
Eastern built vessels well fitted, and built with good materials, are held at $50 per ton.

NOTICES TO MARINERS.

Light at Ceuta—Coast of Africa. Official information has been received at the office of the Lighthouse Board, that the Spanish government has given notice, that on the 1st of December, inst., (1855,) a light would be established on the summit of the hill named Cerro de los Mosqueros, on Almina Point, at Ceuta, on the north Coast of Africa, at the eastern entrance of the Strait of Gibraltar.

The light will be a bright first-class light, *revolving* once a minute. It is placed at an elevation of 476 English feet above the level of the sea, and will be visible in clear weather at the distance of 27 miles.

The lighting apparatus is catadioptric, of the first order of the system of Fresnel. The tower stands in latitude 35° 53 44 N., longitude 5° 17 13 west of Greenwich.

Main Light at Cape Henlopen—Delaware. Notice is hereby given that the tower of the main light at Cape Henlopen, Delaware, has been surmounted with an iron watch room and lantern, painted black, and furnished with a Fresnel catadioptric apparatus of the first order, fixed, illuminating 315 degrees of the horizon. The focal plane of this apparatus is now one hundred and eighty feet above the sea level, and a light has been exhibited therefrom since the 9th Dec.

Beacon at Plum Gut, North Fork of Long Island. An iron beacon has been erected on a large boulder lying in a northeasterly direction from Orient Point, distant half a mile, and on the west side of the channel through Plum Gut.

This beacon is composed of a centre shaft inserted in the rock and rising 26 feet above low water, surmounted by an iron cage-work in the form of an inverted pyramidal frustum, and is braced from a point 3½ feet above high water, by four 1¾-inch iron rods, to the heads of as many short iron posts inserted in the rock around it at the distance of 3½ feet and rising to the level of low water.

Light-Vessel off York Spit, Chesapeake Bay. In conformity with the Notice to Mariners issued November 9, 1855, a light-vessel, schooner rigged, painted cream color, with the words "York Spit" painted in large black letters on each side, was placed, on the 3d Dec. off the tail of York Spit, to mark that danger, and to guide vessels bound into Mobjack bay and into York river, western shore of Chesapeake bay, Virginia.

She is moored in four fathoms water, hard bottom.

The following compass bearings have been taken from this vessel:

New Point light-house, N. W. by N. ½ N. Back river, S. W. by S. ½ S. Tewe's Point, W. ½ N.

The illuminating apparatus of this vessel consists of eight lamps and parabolic reflectors twelve inches in diameter, arranged in a lantern around the mast at an elevation of forty feet above the level of the sea, and may be seen, under favorable circumstances, by an observer ten feet above the water, at a distance of about ten nautical miles.

Light at Singapore, East Indies. Official information has been received at the office of the Light-house Board, that the government of India has given notice, that on the 17th of March last a fixed light was shown on the Government Hill flagstaff at Singapore.

The light is bright; it is placed at an elevation of 226 feet above the level of the sea, and will be visible in clear weather at a distance of about six miles.

It stands in lat. 1° 16 15 N. long. 103° 51 15 east of Greenwich, according to the Admiralty charts.

Raffles Light on Coney Island. Although no official information has been received respecting it, the mariner is cautioned that there is every reason to believe that a fixed bright light, named Raffles Light, is established on Coney Island, near the western entrance of the main strait of Singapore. The light should be visible in clear weather a distance of 12 miles, except in the quarter from N. W. by W. round northerly to E. N. E.

Lights on the Southwest Coast of Norway. The Royal Norwegian Marine Department at Christiana has given a preliminary notice, that towards the end of 1855 the following coast and channel lights will be established on the southwest coast of Norway:

1. A coast light on Vibber point by the southern passage to Egersund.
2. A coast light on Grundsundholm by the northern passage to Egersund.
3. A channel light on Little Blegen near Langevaag.
4. A channel light on Midtholm near Moster harbor.
5. A channel light on Folgeroen.

These three last named lights serving as guides for the passage on the east side of Bommel and Moster Islands.

6. A channel light on the west side of Leeroen, in the passage between Great Sartor and Leer Islands.

Harbor Light at Nice, Mediterranean Sea. Official information has been received at the office of the Light-house Board, that the Captain of the Port at Nice has given notice, than on the 1st July last a new light, to replace the former light, was established at the extremity of the outer mole of the harbor of Nice, in the gulf of Genoa.

The light is a fixed bright light, varied by red flashes every half minute. It is placed at an elevation of 80 English feet above the level of the sea, and will be visible in clear weather at a distance of about 12 miles.

The lighting apparatus is catadioptric, and of the fourth order of the system of Fresnel.

On nights when the entrance to the harbor is rendered dangerous, on account of the heavy swell, the light will be extinguished in order to signify that vessels cannot at such times enter the harbor, but must seek shelter at Villa Franca on the east or Antibes to the west, according to the direction of the wind.

Bishop and Clerks Light-Vessel, Vineyard Sound, Mass. The Bishop and Clerks light-vessel will be placed at her station on or about the 10th instant, (Januury, 1856.) She will be moored in about 4½ fathoms water, nearly midway between Bishop and Clerks and Middle Ground shoals.

Bass River light bears from this station, N. E. ½ E. Point Gammon light do. N. by E. Hyannis Harbor breakwater, east end, N. ⅜ W. Succonnesset light ship do. W. ½ S. Buoy on south part of Handkerchief, S. E. by E.

The light-vessel is schooner rigged, and has one lantern with eight lamps and reflectors. She has also two hoop iron day-marks, (one at each mast-head,) painted black. Her hull is painted straw color, with the words "Bishop and Clerks" painted in large black letters on each side.

Bearings are magnetic.

The spar buoys on Ribbon Reef and Mashaum Ledge are gone. They will be replaced immediately by a nun buoy of the second class, red and black horizontal stripes on Ribbon Reef, and a black Nun buoy of the second class, numbered 1, on Mashaum Ledge.

A red Can buoy of the first class, numbered 2, with "Sow and Pigs" on the head, will be placed off the point of this dangerous ledge at the same time.

Changes of Buoys in Harbors adjoining Buzzard's Bay, Mass. A black spar buoy numbered 1, has been placed off the entrance rocks, Quamquesset harbor.

A red spar buoy numbered 6 has been placed off Hog Island Ledge.

A red spar buoy, numbered 8, has been placed off Hog Island Point, Hog Island harbor.

A black star buoy, numbered 3, has been placed on Wing's Flats, Sandwich harbor.

A red spar buoy, numbered 4, has been placed off Cow Rock Ledge, Sandwich harbor.

A red spar buoy numbered 12, has been placed in the turn of the Channel above Sail's point in in Cohassett Narrows, Sandwich harbor.

A black spar buoy, numbered 14, has been placed on the lower end of the Middle Ground, Sandwich harbor.

A black spar buoy, numbered 13, has been placed on the upper end of the Middle Ground, Sandwich harbor.

A red spar buoy, numbered 14 has been placed on Bourne's Flats, Sandwich harbor.

A red spar buoy, numbered 10, has been placed near the rocks off Agawam Point, off the entrance of Monument River, Sandwich harbor.

In conformity to a notice published Oct. 5, 1855, nun and can buoys in Boston harbor are being changed to spar buoys, of a corresponding color and number.

Notice is hereby given that Bass Rip and Great Rip buoy boats on Nantucket Shoals are missing from their stations. They will be replaced by suitable buoys as soon as possible

Notice is hereby given, that the red spar buoy on Winthrop's Bar, numbered 2, in Broad Sound, is missing. It will be replaced as soon as possible.

A new light-house and keeper's dwelling have been erected at Watch Hill Point, near Stonington, R. I. Instead of the revolving light, a fixed white light will, on and after Feb. 1, 1856, be shown from the new tower, which is fifty feet N. W. of the old site. The light will be 62 feet above mean low water, and will be visible from the deck of a coaster about 12½ nautical miles.

The Vineyard Gazette says that the buoy on Muskeget rock, or shoal, is nearly one mile from where it should be; and the buoy on Mutton shoal is missing. The Buoys in the Vineyard District have been almost useless the past season, owing to their wrong position.

Harding's Ledge Bell Boat. Notice is hereby given that the Bell Boat, near Harding's Ledge, Boston Harbor, is missing from its station. It will be replaced by a black nun buoy of the second class, as soon as possible.

South Shoal Light Vessel. The Nantucket New South Shoal Light Vessel will be placed at her station on or about the 25th inst (January, 1856.) She will be moored in 14 fathoms water, about two miles south of the southern extremity of the New South Shoals of Nantucket.

Old South Shoal bears fromthis station N. by E distant 8 miles. Tom Never's, do. N. N. E. ½ W. do. 21 miles. Block Island light, do. W. N. W. do. 78 miles. Sandy Hook Light Vessel, do. W. do 180 miles.

This light vessel is schooner rigged, and has two lanterns, each having eight lamps and reflectors. She has also two hoop iron day marks (one at each masthead) painted red.

Her hull is painted red, with the words "South Shoals" in white letters on each side.

CHANGES IN HARBORS ADJOINING BUZZARD'S BAY. A black spar buoy, numbered 1, has been placed off the entrance rocks, Quamquisset harbor.

A red spar buoy, numbered 6, has been placed off Hog Island and Ledge.

A red spar buoy, numbered 8, has been placed off Hog Island Point, Hog Island harbor.

A black spar buoy, numbered 3, has been placed on Wing's Flats, Sandwich harbor.

A red spar buoy, numbered 4, has been placed off Cow Rock Ledge, Sandwich harbor.

A red spar buoy, numbered 12, has been placed in the turn of the channel above Sial's Point, in Cohasset Narrows, Sandwich harbor.

A black spar buoy, nnmbered 11, has been placed on the lower end of the Middle Ground, Sandwich harbor.

A black spar buoy, numbered 13, has been placed on the upper end of the Middle Ground, Sandwich harbor.

A red spar buoy, numbered 14, has been placed on Bourne's Flats, Sandwich harbor.

A red spar buoy, numbered 10, has been placed near the rocks off Agawam Point, off the entrance of Monument river, Sandwich harbor.

VINEYARD SOUND ("SOW AND PIGS" LIGHT VESSEL. This light vessel which parted her moorngs on the night of the 11th inst, was replaced at her station off the Sow and Pigs Ledge, between the entrances to Vineyard Sound and Buzzard's Bay, on the 19th inst, in 3½ fathoms water.

The following compass bearings have been taken from this light vessel:—

Cuttyhunk Lighthouse, N. E. ¾ E. Gay Head Lighthouse, E. S. E. Noman's Lard, S. E. by E. Dumpling Rock Light-house, N. N. E. ¼ E.

Notice is hereby given that the Alden's Rock Bell Boat went adrift or snnk on the night of the 29th Dec.

The Telegraph at Nantucket reports the Centurion Buoy No. 5, and George's Island Buoy No. 7, drifting out Light-house Channel in the ice 1st Jan.

CHANGES AT WATCH HILL POINT, RHODE ISLAND. A new light-house tower and keeper's dwelling (in connection therewith) have been ereeted at Watch Hill Point, near Stonington, Rhode Island.

On and after the first day of February next (1856,) the present revolving light at that station will be discontinued, and a fixed white light will be exhibited instead thereof, from the new tower.

The illuminating apparatus is a fourth order Fresnel lens.

"T he new tower is 50 feet N. W. of the old one, and its base is 22 feet above mean low water; is built of granite and is unpainted. The dwelling-house is of brick, and is whitewashed.

The light will be 62 feet above mean low water, and should be seen, under ordinary states of the atmosphere, from the deck of a vessel 10 feet above the water, at a distance of 12 ½ nautical miles.

On or before the 20th Dec., if the weather permits, an iron bell buoy boat will be placed near the Shagwong Reef, north of Montauk Point, N. Y.

It will be painted black, with "Shangwong Reef" in white letters on the hull and frame work. The bouy heretofore marking the reef will be removed.

PILOTAGE.—The Wilmington *Herald* of the 1st January says:—At the request of the Board of Commissioners of Navigation and Pilotage for Cape Fear river and bars, we publish the act regarding pilotage, as laid down in the 17th sec., 8th chapter of the Revised Code of the Laws of North Carolina, to take effect on and after this date (Jan. 1, 1856,) to wit:—

"No master of a vessel shall be required to take or keep pilot on board, or pay for pilotage in the river, inside of the bar, in going either up or down the river, nor shall any vessel under sixty tons burthen be compelled to take a pilot while crossing the bar, or pay pilotage, except where signals are made for a pilot; and no vessel coming in at either of the said inlets, with a view to the more convenient prosecution of her voyage, or to make a harbor, shall be subject to the payment of pilotage."

LIGHTHOUSE AT SEVEN FOOT KOLL, MOUTH OF PATAPSCO RIVER, MARYLAND.—On and after the nigbt of the 10th of January next, (1856,) a light will be exhibited from the new light-house recently erected at Seven Foot Knoll, mouth of the Patapsco river, Maryland, from sunset to sunrise; and in conformity to law, the light at Bodkin Point will from that time be discontinued.

The Seven Foot Knoll light-house is a circular iron structure, 40 feet in diameter, resting upon nine wrought iron piles, arranged in the angles and centre of an octagon, and conected with each other by means of diagonal braces.

The color of the structure is black, except the window-shutters, which are white.

The illuminating apparatus is dioptric, of the fourth order of Fresnel, and will show a fixed white light, visible, in a clear state of the atmosphere, from the deck of an ordinary vessel, (say ten feet above water level,) at a distance of 12¾ English, or 11 nautical miles.

A fog bell will be attached to this light-house, to be rung by machinery during foggy weather.

The light boat on Frying Pan Shoals having broken from her moorings, was towed to the government wharf at Smithville, N. C., Dec. 12,

A Havana paper states that the light on Salt Key has been discontinued since the 26th Dec., the burners (lamps) being worn out and useless.

Lighthouse at South Farallone Island, about 27 miles broad-off the Coast at the Entrance of San Francisco Bay, California.—The light-house tower stands on the highest peak of the South Farallones. It is built of brick, 17 feet in height, and is surmounted by a lantern and lighting apparatus of the first order of Fresnel. The light is elevated about 360 feet above mean sea level, and should be visible, in a favorable state of the atmosphere, from a height of 15 feet above the water, at a distance of 30 statute or 26 nautical miles. At near distances, under favorable circumstances, the light will not wholly disappear between the intervals of the greatest brightness.

The latitude and longitude of the light, as given by the Coast Survey, are :—

Latitude 37 deg. 41 min. 44 sec. N. Longitude 122 deg. 59 min. 18 sec. W.

The magnetic bearings, and distances in statute miles, taken approximately from the chart of the same survey, are :—

Point Reys, N. 29 20 W. 20 miles. Point Bonita, N. 56 E. 27 miles. Point San Pedros, 86 E. 29 miles.

The light will be exhibited for the first time on the night of the 1st of January, 1856, and thereafter every night from sunset to sunrise, until further notice. It is a revolving white light, showing a prolonged flash every minute throughout the entire horizon.

LAUNCHES.

At New-York, Dec. 25, by Thomas Erskine, Esq., schooner Castor, 253 tons register.
At Portsmouth, Va., recently, by Messrs. Page & Allen, ship John A. Parks, 1100 tons.
At Newburyport, Mass., Dec. 11, by John Currier, Esq., ship Blondel, 650 tons.
At Wiscasset, Me , Dec. 8, by Hilton & Carlton, ship Isabella, 1000 tons.
At Newport, R. I., Dec. 6, by S. H. Cottrell & Co., a herm. brig Redwing, 180 tons.
At Quincy Point, Mass., Dec. 8, by George Thomas, Esq., ship Shakspeare, 1300 tons.
At Chelsea, Dec. 8, by John Taylor, Esq., ship Derby.
At Waldoboro, Nov. 25, by B. L. Harriman, Esq., barque H. R. Harriman, 600 tons.
At East Machias, Me., Dec. 10, by. N. W. Foster, Esq., a schooner, 170 tons.
At Boothbay, Me., by Sargent & White, a bark of 530 tons.
At Belfast, Me., Dec 8, by Carter & Co., bark Diana, 500 tons.
At Chelsea, Mass., Dec. 15, by Jotham Stetson, Esq., ship Harry Bluff, 1000 tons.
At Camden, Me., Dec. 8, by Hodgman & Glover, bark Aurelia.
At Falmouth, Mass., Dec. 26, by Samuel Knight, Esq., ship Artizan, 900 tons.
At East Boston, Dec. 11, by Robert E. Jackson, Esq., ship Harry of the West, 1100 tons.
At East Boston, by R. E. Jackson, Esq., ship Dragoon, 1400 tons.
At Harpswell, Mass., Dec. 27, by Curtiss & Estes, barque Paul C. Alexander, 280 tons.
At Belfast, Me., Dec. 28, by Wm. McGilvey, Esq., brig A. J. Ross, 242 tons.
At Bath, Jan. 5, by Lemont & Robinson, ship Mary Russel, 744 tons.
At Poughkeepsie, N. Y., about Dec. 20, schooner Oliver H. Booth.
At Warren, Me., Dec. 9, brig Darien, 300 tons.
At West Dennis, Me., Dec. 20, schooner Sylvester, 300 tons.
At Warren, Me., Dec. 24, barque Our Union, 300 tons.
At Mystic, Conn., Dec. 21, ship of 1500 tons, not named.
At Lincolnville, Dec. 9, barque Almira Coombs, 350 tons.
At Owl's Head, Me., Dec. 15, a schooner of 290 tons.
At New Bedford, Mass., Dec. 25, barque Courser, 300 tons.
At East Boston, Dec. 28, ship Orion, 1000 tons.
At Bath, Me., Dec. 10, by Lemont & Hall, ship Adam Lemont, 1000 tons.
At Marblehead, Mass., Jan. 8, ship of 1200 tons.
At Bath, Jan. 5, by Trufant, Drummond & Co., ship Herald, 670 tons.
At Fell's Point, Baltimore, Jan. 3, ship Cherubim.
At Tremont, Me., Dec., 26 by A. Richardson, Esq., brig Northern Eagle, 257 tons.
At Bath, Me., Dec. 27, ship Exchange, 600 tons.
At Bath, Me., Dec. 27, by Johnson Ridout, Esq., a ship of 800 tons.
At Cape Elizabeth, Jan. 11, by Benjamin W. Pickett, barque Ellen Stevens, 250 tons.
At Tenant's Harbor, Me., by Robert Long, brig G. W. Barter, 287 tons.
At Cleveland, Ohio, Dec. 20, a schooner of 370 tons, 130 ft. keel, 26 ft. beam, 11 ft. hold.
At Bath, Me., Jan. 5, ship Mary Russell, 744 tons.
At New-York, Jan. 15, by Rosevelt, Joyce & Co., ship Glad Tidings, 900 tons register.
At Bath, Me., Jan. 12, Ship Canova, 600 tons.
At Portsmouth, Va., Dec. 10, by Page & Allen, a ship.
At Gosport, Va., Dec. 12, U. S. steam frigate Roanoke, launched and sunk.

ANNUAL REPORT OF THE SECRETARY OF THE NAVY.

We sincerely wish that the whole of the Hon. Secretary's Report were such as to make it of interest to our readers to adopt it without note or comment, but to do so would take some twenty pages of our journal, the first eight of which would be taken up with a general resumé of the service of six squadrons, employing vessels of every class, twenty-five; the surveying expedition, under Commander John Rodgers, for the reconnoissance of the Behring's Strait, the North Pacific Ocean and China Seas, three; on the lakes, one; surveying the river Parana, one; stationary, connected with Pacific squadron, two. In all, thirty-two vessels employed.

About as much more space it would take to print what is said under Report of the Naval Board.

Our views on this subject we have fully expressed, and they are unchanged by the palliation which is offered for their action on the high authority of the Attorney-General for a proper interpretation of the provision, "that no officers upon said Board shall examine into, or report upon, the efficiency of officers of a grade above them." His opinion was, that "the entire body will sit together, deliberate and determine, and by proper means authenticate their conclusion as to lieutenants, masters and passed midshipmen; after that the lieutenants will have to retire, and the captains and commanders will act in regard to all officers of the rank of commander, when the commanders must retire; and the captains will act as to the officers of that rank. All the examinations having thus been made, and the proper judgments reached, in the manner contemplated by the law, the sum total of the opinions will be certified to the Secretary in such form of authentication as he in his regulations shall see fit to prescribe."

Increase of the Navy—"by an additional number of steam sloops-of-war, carrying each about twenty guns of the best modern improvement, requiring a draught of not more than eighteen feet, and thereby being capable of entering every Southern as well as northern port of any magnitude," is advocated for war purposes.

There are few if any of our southern ports carrying sufficient water for vessels of this draught, which are not accessible to such as we now have, and for war purposes their *bars* are better means of defence than the steamers would be. For a different object, one to belong to each of our squadrons, such vessels would be of great utility. One such on the coast of Africa would be worth more than the whole squadron which is usually kept there.

The enlistment of experienced seamen, the high appreciation of the honorable discharges authorized by an act of the last Congress, and the operation of the naval apprentice system, instituted by the Hon. Secretary since the adjournment of Congress, are all objects of gratulation in their beneficial effects. The discipline bill of rewards and punishments is deemed effi-

cient in its operation, while the inducements to a better class of young men to enter the navy now that flogging does not exist, are such that the character of seamen will be materially improved. There are not now, probably, a dozen officers in the navy, who *commanded well with flogging*, who would, under any consideration, have it restored. The ability to command without it is manifest among all the best officers, as the ability to command with but the least frequent resort to it, was by the same class of officers before it was abolished.

The recommendation to employ ten thousand seamen, instead of seven thousand five hundred, now allowed, is renewed.

A new and scientific corps is proposed, whose duty shall be confined to hydrography, ordnance, civil engineering, and other scientific duties; this to be constituted of officers now in the navy, without adding to their number, and to consist of such as are employed on hydrographic duty, coast survey, at the observatory or ordnance, and other scientific duties essential to the proficiency of the navy. "Officers cannot attain that complete knowledge of these branches, without long and continuous devotion to them, and yet, under the present system, there is naturally a feeling of discontent and dissatisfaction on the part of those who are encountering the hardships, dangers and privations of sea duty, in the place of those who are quietly pursuing their scientific duties amid the comforts of home and family. Let this corps have the same relation to the other officers of the navy that the staff has to the line in the army, and being composed of a certain number of captains, commanders, lieutenants and passed midshipmen, their promotions in the corps can be so regulated as not to interfere with the regular promotions of officers, more exclusively devoted to sea-going duties." Many officers of excellent judgment and enlarged experience are of opinion that those who are assigned to those duties ashore, become disqualified for duty afloat, and that constant sea duty allows neither the time nor opportunity for proficiency in the other branches. *Some* of the duties here contemplated are doubtless of such a nature as to require peculiar proficiency, and such as becomes perfect from long practice. But to do "all their duty both ashore and afloat" is so lately a rule of action, that it is, to say the least, surprising that such a corps should now be proposed, and, "according to many officers of excellent judgment," to be constituted of those who are not capable of doing "all their duty both ashore and *afloat*," though their promotion can be provided for by "a bill to reach the object desired." The brief of this is, to provide that a certain set of officers, who have heretofore been permitted to occupy stations that keep them from "encountering the hardships, dangers and privations of sea-duty," shall now perpetually have these berths by law. It is not because they alone are qualified, but because others equally so, have not been ordered to the stations. If the officers who have so long occupied these posts, have become inefficient for duty afloat, why were they not retired? One, it is true, eminent at his post, was, but where are the others

whose promotions are to be provided for by special act? All of the "hardships, dangers and privations of the sea," are increased by providing that those who encounter them cannot look forward to such duties as would allow them some respite from the most arduous of all professions. A corps is here asked for, to monopolize desirable duty, and such as he who sees most sea service should have best title to.

Of the marine corps, such an increase is recommended as would be essential on building the steam sloops-of-war. "It would certainly contribute largely to its efficiency, if some plan could be adopted for introducing hereafter, officers who have experienced some of the advantages of military education, either at West Point or Annapolis."

The remainder of the report is taken up with a lengthy notice of the Arctic Expedition, and a general filling in without particular point beyond what we have here noticed, and specific mention made of the presentation of gold medals to Surgeon Thomas Williamson, and passed Assistant Surgeon James F. Harrison, for their professional services to the officers and men of the French steamer of war Chimere, at Norfolk, during the summer of 1854; the governments of Prussia and Holland having similarly compensated Lieutenant Maury for his contributions to science and navigation; and a recommendation of the necessary legislation to enable those officers to accept of the proffered testimonials.

The accompanying reports to the Hon. Secretary will be noticed in our next, if the House of Representatives renders them accessible.

NEW BOOKS.

Man-of-War Life: A Boy's Experience in the United States Navy, during a Voyage Around the World, in a ship of the line; and

The Merchant Vessel: A Sailor Boy's Voyages to see the World. Cincinnati: Moore, Wilstach, Keys & Co. New-York: Miller, Orton & Mulligan. Boston: Whittemore, Niles & Hall. Philadelphia: J. B. Lippincott & Co., 1856—

Are well told tales by a sailor boy, who understands better than most authors who write sea-books, how to entertain landsmen. His discrimination between the naval and the merchant service is accurate and intelligible, while none of the little things too apt to be passed over by the sailor, on account of their perfect familiarity to him, but of great interest to the landsman, are omitted. The sailor's life can here be appreciated, his toils and recreations comprehended, his friends and enemies contrasted—and he can be read of as he is. All this, too, is associated with good cruising ground—enough of Jack ashore to give zest to the yarns which are best spun by the stimulus of the sea, but best enjoyed by the fire-side. All persons who would understand a sailor's life and become acquainted with his duties, who sympathise with him in his hardships and enjoy his yarns, should read these books.

OUR STATE ROOM.

The African Squadron.—By the arrival of the sloop-of-war "Dale," at Norfolk, on the 12th ultimo, we have letters from the African Squadron up to the time of her sailing from Porto Praya, Dec. 11th; her relief, the St. Louis, which sailed from Philadelphia, Nov. 10th, having arrived the day before. The cruise of the Dale is best told by her crew in the *Southern Argus:*

A Handsome Tribute.—The gallant tars of the U. S. sloop-of-war Dale, have asked the use of our columns for the following hearty compliment to their officers. We accord them their request with pleasure.

Messrs. Editors :—We are more accustomed to handle the marlinespike than to wield the quill; but we would offer a few simple words in reference to our good ship the sloop-of-war Dale, which we hope may find a place in your popular journal.

After a cruise of 26 months on the coast of Africa, she is once more safely anchored in the American waters, and her crew will soon separate and return to the bosoms of their families.

In doing so we shall carry with us feelings of the highest respect for the officers under whom we have served, and shall hold them in grateful regard for the kindness and justice with which they have maintained the discipline of our ship. Possessing strong minds and kind hearts, with the requisite energy of character, they have secured the end of rule on board the ship without resort to any stringent method of punishment, for in no instance during the cruise has a court martial been convened, and as a ship's company we are happy to think, and do not hesitate to state, we have conducted ourselves worthy of the mode of discipline, though our disappointment in not returning home sooner has been very great; yet the good order and attention to duty has constantly increased, instead of falling off, as under the circumstances might have been feared would be the case. This is to be attributed to the treatment we have received. We are indebted to every class of officers for their kindness: to the Captain for the many indulgences granted; to the First Lieutenant and other sea officers for their regard to our comfort as men, and for their orders without abusive language; to the Surgeon for his fidelity and kind attention when in sickness. We say these things not to flatter those who have had command of us. We have now no favor to ask and nothing to gain from them. Our motive is to point out to our brother seamen every where, officers so worthy of their honor and good will. This may be thought a matter of little moment, but it is one that would tell well in recruiting a crew for a ship, for there is not one sailor who prefers to sail with those known to be tyrants; but those commanders known to possess feelings of humanity, will never have much trouble in selecting a crew. Most of us serve and have served in naval ships, and we feel deeply interested in these matters. We have experienced in an especial manner in our late cruise the benefits of kind, considerate, and just treatment. We wish such treatment to become more universal in the service, so that all ground be taken away for an outcry against any officer for tyranny and oppression.

In this ship we have been treated as men who have minds and hearts like

other men ought to be treated—treated in a manner to lead us to respect ourselves, so as to lead others to respect us. We believe that our conduct has shown that we appreciate such kindness, by the promptness and efficiency with which we have performed our duty, and the constantly-increasing good discipline, order and sobriety that have prevailed on board. We are also proud in the belief that we have shown to the officers over us, and to the officers of the Squadron whom we have fallen in with, that the Dale has not been surpassed by any other ship in the quickness and skill with which her canvas has been handled, or the precision of aim and strength of arm with which her batteries have been exercised. We are proud of our ship, and proud of the flag she bears; and in expressing the good will we feel towards every officer who had the honor to command on board the Dale, we would say that in any time hereafter we would deem it a great pleasure to serve under their command, feeling confident that we should make a happy cruise.

That every officer may find a fullness of happiness in returning to the bosom of his family, after so long an absence, is the sincere wish of your most obedient shipmates. ALL HANDS.

The following is a list of the officers of the Dale:—

Commander—W. McBlair. Lieutenants—Edw'd A. Barnet, J. J. B. Walbach, J. M. Duncan; Surgeon—J. O'Connor Barclay. Purser—J. V. B. Bleecker. Acting Master—L. A. Kimberly. Captain's Clerk—J. A. Knapp. Boatswain—T. Whitmarsh. Carpenter—Thos. C. Farrell.

The St. Louis and Dolphin were at Porto Praya when the Dale left, the former to sail for the coast in about ten days, and the latter bound north.

The flag ship Jamestown was on the coast, having sailed from Porto Praya, Nov. 12. The health of the squadron was good.

OUTRAGE OF BRITISH OFFICIALS IN HONG KONG.—The latest intelligence from the East Indies marks another date in the perpetual outrages committed by ignorant and bigoted British officials upon the rights of nations. James Madison, an American citizen and one of the crew of the American ship Reindeer, Capt. Nichols, shipped in New-York for the voyage, *deserts* at Hong Kong, and finds an official ear to charges of assault against his commander, *while under* the American flag. Soon after Madison's desertion, Capt. Nichols took the usual course of applying to the police to effect his arrest and return on board, but in this he was unsuccessful.—Eventually Madison returned of his own accord, and being mutinous, was put in irons. Captain Nichols, being out of the ship, a band of negroes bearing the authority of police, boarded her, released Madison, and took him ashore. They then proceeded to take Capt. Nichols for the alleged assault, and brought him to trial before the British Colonial Court, which fined him $75! The Captain and the United States Consul both protested against this, on the ground that the Court had no jurisdiction over American vessels. Nichols, therefore, refused to pay the fine, and on his arrest being or-

dered he took refuge on board the U. S. frigate Powhattan, Captain McCluney, but before the outrage could be as severely dealt with as it deserved, and would have been by Capt. McCluney, the matter was cut short by the payment of the fine by one of the owners of the Reindeer. The judgment of the Court, however, was carried into effect, and Madison discharged by the British officials from fulfilling his contract under the laws and flag of the United States.

Maritime law is so explicit on difficulties of this nature, as to leave no question in the mind of any one, having even the shadow of capability to exercise the most humble official capacity, as to the total ignorance of the British officials in this case. They have gone even farther—arrested and committed the U. S. Consul for unlawful rescue.

Our Consuls have exclusive charge of the internal order of merchant vessels, and they alone have the right and cognizance of differences which arise whether at sea or *in port*, between the captain, officers and crew, and local authorities have no right under any circumstances whatever to interfere, unless they are called on by the Consul to *aid him* in cases of extreme necessity. On no subject have our statesmen so clearly expressed themselves in every bearing of the laws of nations as in what pertains to maritime law, and "to not understand it" by any official, is an excuse which should never be tolerated by our Government:—above all, when applied to those who profess to be wisest and who thereby set all law at defiance. Mr. Webster declared that "if a murder be committed on board an American vessel, by one of the crew upon another, or upon a passenger, or by a passenger upon one of the crew, or upon another passenger, while such vessel is lying in a port within the jurisdiction of a foreign State or sovereignty, the offence is cognizable and punishable by the proper Court of the United States." Yet in the face of such and other authorities, outrages are perpetrated by those who read in antiquated books of the *mistress of the sea*, with their eyes closed, and all their senses obtunded to the realization of their now being the masters of innumerable negro squads the world over, too ignorant to comprehend the relation of subject and government. The importance of commerce to the United States is too great to be interfered with, or in any manner obstructed by the habitual recurrence of outrages as culpable for the want of a proper understanding, as they were in times gone by, by premeditation, and as there can be no difference in the injuries inflicted, we see no reason why the same stern satisfaction and reparation should not be demanded.

YATCHTING INTELLIGENCE.—*Bell's Life in London*, of the 9th ult., has the following paragraph:—

WE hear rumors of a grand prize to be got up at Douglas, Isle of Man, during the coming season. We believe it to be the intention of designating

it the "Champion Prize," and that the winner thereof shall be entitled to the proud designation of "Champion of the Channel." Measures have already been taken to further this object, and we may look forward with pleasing anticipation to a gathering of the fastest vessels in the world to compete for this high distinction. We hope Brother Jonathan may be induced to favor us again. If he does, he shall meet a hearty welcome; but this much we promise him, that the oak is cut and dry, and the plank well seasoned, that will give him more to do than he experienced in the Cowes waters.

We take no issue with our trans-Atlantic friends as to the advantages of having a good supply of seasoned timber for Yacht building. We do not know what are the opinions of the Yachting Clubs on this side of the Atlantic, as to the feasibility of entering upon this race. But this we do know, that three months are sufficient for modelling, cutting the timber, building the vessel, and favoring the yachting people of England with a sight at the vessel, which will do no discredit to Brother Jonathan, in 1856.—Eds.

OUR LOG BOOK.

Important Errata.—In our article on "Signal Lights," taken from the *Oswego Times*, in our last number, p. 306, the latter part of the clause from line twenty-four should read—" when two vessels are beating to windward, or opposite different tacks, the vessel on the *starboard* tack to keep her course when approaching, the other to bear *away* and pass under the stern of the other," &c. *We copied the article just as it is printed in the paper from which we took it.* Note.—The word *larboard* was, doubtless, mistaken by the printer, just as it is likely to be by the helmsman, and it should be abolished from the nautical vocabulary for *port*, which is fully as expressive and easy of distinction.

Naval Court Martial.—A court martial assembled at the Philadelphia Navy Yard on the 18th ult., for the trial of Commander Robert Ritchie, charged with using insulting and disrespectful language to captain Samuel F. DuPont. The differences between the parties are reported to have grown out of their relations to the late Retiring Board, of which Captain Du Pont was a member, and Commander Ritchie a subject—he being retired on leave.

The following is a list of the officers who compose the Court:—Commodore L. Kearney, President; George W. Storer, E. A. F. Lavalette, Isaac Mayo, Captains Thomas A. Conover, James M. McIntosh, John B. Montgomery, Joshua R. Sands, William C. Nicholson, John Kelly, Thomas A. Dornin, Frederick Engle and John Rudd. Commander H. B. W. Kennedy will be Judge advocate, and Hon. Charles C. Conrad, ex-Secretary of the Navy, counsel for the accused.

Death.—Commodore Charles Morris, U. S. Navy, died in the city of Washington, January 27th, aged 72 years.

Loss of the Packet Ship St. Dennis.—This ship was built by the Hon. J. A. Westervelt, in the year 1848, and was of about 1000 tons burthen, and cost about 65,000 dollars. She was commanded by Captain Alonzo Folansbee, who as a seaman and a gentleman, it gives us pleasure to bear testimony, having formed his acquaintance personally. On the last voyage the ship was heavily laden with an assorted cargo, as follows:

Wheat in bags	12346 bushels.	Bacon in hogsheads	18640 lbs.
Rye in bags	394 bushels.	Tobacco in hhds. manufact'd,	4062 lbs.
Flour in barrels	3704.	Copper in hogsheads	6134 lbs.
Ashes in barrels	58.	Tea in half chests	80
Rice in tierces	187.	Wooden ware in packages	9
Seed in casks	5.	Sewing machines	20
Cotton in bales	95.	Pieces of locust timber	3133
Shoes in cases	5.		

The cargo was valued at $175,000.

The ship cleared on the 1st and went to sea on the 4th of January, 1856, having 41 souls on board, 13 of whom were passengers, 1 captain, 3 mates, 1 carpenter, 1 steward, 2 cooks, 1 cabin boy and 20 seamen. On the 5th, encountered a heavy gale which continued during the 6th, with very heavy seas. At 1 A. M. ship hove-to under main spencer; wind then suddenly changed from southeast to northwest, and blowing a hurricane; ship hove down on her beam ends; main deck and cabin filled with water; stove main rail, broke sides out of forecastle, and stove all the boats; shifted cargo, leaving ship listed heavily to starboard. Finding she would not right, at 6 A. M. of the 6th cut away the mizzenmast; at 6 30 cut away mainmast; then wore ship, sea running tremendously, and breaking furiously over the ship. At 8 A. M. found ship sinking, got out the long boat, which, although badly stove, succeeded in keeping afloat, by constant bailing.

At 11,50 A. M. all who could be persuaded to leave the ship took to the boat. These were the first and third mates, and nine of the crew; the first mate repeatedly entreated the captain to come into the boat, but he declined. The latter was apparently calm and collected, and, when last seen, was walking the after deck winding up his watch. At 12 M. the vessel went down. Those in the boat remained until 5 P. M. of the 7th—twenty-nine hours—having a barrel of bread only to subsist on. At this time they were picked up by the ship Naples, Captain Lowell, from Leghorn, 70 days out, and short of provisions, who brought them into port.

TYPES OF TRAVEL IN THE DOMINIONS OF NEPTUNE.

Sept. 185–.—Another calm and quiet Sunday at sea; hours of thoughtful contemplation; more than three thousand miles from our native shore; abroad and alone on the wide expanse of waters. Neither the same sky is above, nor the same scenes around us; but the same great Creator and Governor controls the destinies of ourselves here and our friends at home. What small and non-essential particles of the great creation are we! Yet how self-sufficient and presumptuous! If our holy religion had no other virtue than to teach us our utter insignificance in the grand scale of being, it were even then the greatest blessing ever vouchsafed to man. The drifting nautilus, or "Portuguese man-o'-war," is floating here and there on the smooth surface of the great deep, and a few porpoises are occasionally seen rolling and snorting. These are something to break in upon monotonous thought—to diversify nature—better than no *companion de voyage*. Yet the scene is one —— Hark! the boatswain's whistle! "Hear there, fore and aft! all you men who wish to do so, go below to prayers for Jack Powell." Poor Jack Powell!

I have been with the ship's company to prayers. There are times when the cords of sailors' hearts let loose all their hardness. All who suppose that the sailor is too rough and hardened to have a sympathizing tear, should have just been here at the cot-side of a dying comrade, and if through the glimmering tears which bedimmed every eye, a glance could have been gained, and the thrill felt, when—"Peace to this ship and to all that dwell therein"—struck home in the unuttered amen of every breast, then methinks a new bond of affection and sympathy would have been set up.

To take our prayer-book and read over the service for the visitation of the sick, when we and all about us are well, and even where we are accustomed to witness it in the duties of a clergyman ashore, we can admire the prayers and their admirable adaptation. But to feel them, be cut off from all the sacred services of the Church, be compelled to let months and years pass by without the sound of sacred words, which you cherish in your memory and whisper in your closet—and "peace be to this ship and to all that dwell in it,"—even though uttered by a layman, will strike with a force which reflects the mind to the Prince of peace, and impresses the heart with a quality to *feel* that there is a reality in words which only requires a full appreciation of the occasion which gives them utterance.

Jack Powell has been a favorite in the ship ever since we left Norfolk. He has several times been slightly ill, but quickly got up again, but for the last few days his disease has assumed a more serious aspect—general paralysis, and he has not been able to speak for nearly a week. In a ship's company there are always some turbulent spirits, some skeptical minds, and

sometimes openly declared infidels and even professed Deists and Atheists. In our crew of over two hundred were the usual proportion. When the word was passed awhile ago for all who wished to go below to prayers for Jack Powell, "I bet nobody goes," was spoken loud enough to be heard by most of those who were in the vicinity of the ward-room hatch; but it had an excellent effect—nearly everybody went. As before intimated, our would-be parson was a layman, the doctor who had carefully watched the patient, in which all felt a deep interest. On nearing the cot he repeated the words already quoted. Powell's condition, before he lost the power of speech, had been intimated to him by the doctor, and he manifested a disinclination to converse on what appeared to be the most probable result of his case. Most of his attendants had treated him, during his speechless condition, as if he could not comprehend what they did and said, and had been cautioned about that, as it was supposed that Powell might be in the full possession of his mental faculties. When the doctor approached his cot he addressed him: "Powell, I have before acquainted you with your condition, that I thought it very doubtful whether you would ever recover. I now think you have but a few hours to live, and that you may yet be able to prepare for death. You have heard my caution to your messmates around you while you have been unable to speak, and you have doubtless heard the word passed which has assembled your shipmates to your side. I think that you understand all that I say to you, and though you are unable to reply by words, you can neverthelss signify your will whether we shall pray for you. If yes, you can possibly turn your eyes to the right; if no, to the left. Powell, shall we pray for you?" "Yes, sir!" was uttered loud enough to be heard by all present.

I never heard such a sermon before—I never attended such a prayer-meeting before. Jack Powell died about two hours afterwards. "Yes, sir," were the only words he spoke during the last week of his existence. The next day we committed his body to the deep, under the solemn order for the burial of the dead at sea. There were no dry eyes at that funeral.

ICONOGRAPHIC CATALOGUE OF THE U. S. NAVAL LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

Part 1.

SECTION III.

MISCELLANEOUS HISTORY.—*Concluded.*

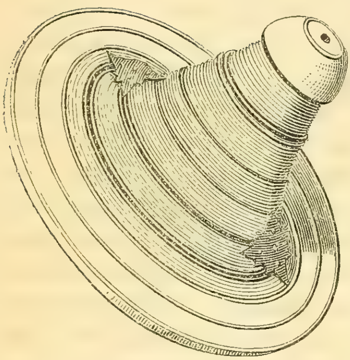


Fig. 15.

FIGURE 15. An Arabian shield. This is made of rawhide, is nearly half an inch thick, and so hard that it would resist a blow from the keenest sabre. It is so beautifully moulded on the outside, that it has the appearance of having been turned in a lathe. The handle on the inside, which is large enough for a firm grasp, is secured by rivets, which are headed over metallic plates as shown in the figure, and it is, in every respect, well calculated to serve the purpose for which it was designed, to perfectly secure the hand and fend off blows in combat.

Fig. 16.

Figure 16. A stilt ornament and foot piece, from the Sandwich Islands. It is made of hard, dark colored wood. Its shape sufficiently well indicates its adaptation. The natives of some of these islands seem to amuse themselves by thus varying their indolence with the construction and use of such articles as can never be of profitable utility, further than the exercise of ingenuity with rude tools. As samples of workmanship, this is a fair one in a large collection, from the Sandwich and other islanders in various parts of the world. With the benefits of civilization, such things are fast becoming relics even among the nations which originated them.

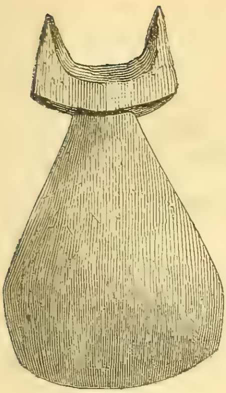


Fig. 17.

Figure 17. A "chopping knife," made of wood, from the Society Islands. It is not sharp enough to cut, yet it would, doubtless, do good service with a strong arm, towards rendering tough meat tender. It has a smooth hand-hold, and appears to be as well adapted to bruising meat as anything else, and as meat is, most probably, a luxury among this people, such a utensil may be all-sufficient for the purpose.

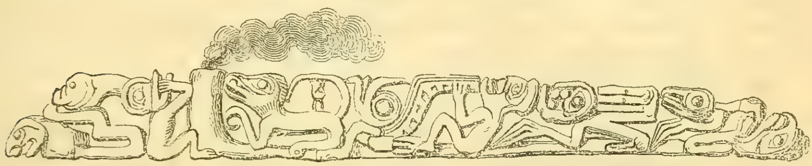


Fig. 18.

Figure 18. A North American Indian's meerchaum. It is more than a foot long, smoothly cut out of slate stone, and shows a perfection of workmanship with *stone tools*, which could hardly be surpassed by an experienced modern pipe-maker with the finest steel. The luxury of using such a pipe can be best appreciated by those who are as fond as the Indian of smoking.

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THE

U. S. Nautical Magazine,

AND

NAVAL JOURNAL.

Vol. III.] MARCH, 1856. [No. 6.

COMMERCE, ITS ADVANTAGES AND INFLUENCE.

Commerce, that great engine by which the blessings of civilization have been diffused throughout the world, originated with the first wants of man; and wherever property became a distinct recognition, there trade was established, and an interchange of articles effected from an abundance that exceeded necessity. The first operation looked only to convenience, and the supply of an immediate want. Commerce, as a distinct profession, could not have existed until a degree of luxury had been attained; when the more adventurous sought in other lands that which could not be found at home. Intercourse between different countries was thus commenced, and improvement and refinement, as a consequence, became progressive. It is not within the limits of our province to follow the multifarious meanderings from its early history down to the present time, of that intercourse among men, for which employment the battle field furnishes neither base nor place for its operations. Long anterior to the time when the Argonauts ploughed unknown seas, in search of the golden fleece, the Chinese had explored the adjacent seas. The history of the commerce of China would furnish a history of that wonderful people, inasmuch as the love of trade is inseparably interwoven with their very being. Whatever obscurity there may be in the early history of China, or absurdity in her traditions, it cannot be questioned that her commerce is coeval with her existence, and that the silk-worm spun its cocoon in Chinese habitations, when the skill of the hunter furnished a wardrobe for the royalty of Europe. In leaving this land of veiled obscurity and tradition to the explorations and confirmations of history, we find that Alexander in his march of conquest, had learned from among the monuments of nations, long since arrived at maturity, that, if he would found his universal Empire by the sword, that it should be sustained by a wide and well-estab-

lished commerce, a lesson not yet fully known in our country at the present day. India had, almost from time immemorial, been the Eldorado of the world. The Portuguese mariner doubled the stormy cape of Africa, to show his countrymen the road to India, so confirmed had the conviction become, that it seemed impossible that there should have been any other road to wealth. Egypt, the birth-place of bondage, never used the sea as a highway during her early history, her commerce being entirely inland; and having a holy horror for the sea, scarcely tolerated intercourse with those countries that did; a prejudice the Greeks and Tyrians, doubtless, were not careful to allay. The ancient States of Phœnicia and Carthage were the most purely commercial, both by land and sea, while the Sidonian shipyards were not less famous for their productions than those of the nineteenth century. The Phœnicians were the earliest navigators, and enriched their country with the wealth of other lands, dotting the shores of their tideless seas with colonies to facilitate their trade. Thales, Solon and Plato, traded in Egypt, and the latter did not think it beneath his dignity to sell oil to pay his expenses in the lands through which he travelled. Solon incorporated one of the laws which he obtained from Greece directly into his own system, which compelled every man at certain times, to give an account of himself to the magistrate, and the mode by which he gained his livelihood; a commercial tariff of some importance to a commercial State. The Romans became a commercial people from necessity; they had learned that if they maintained the conquests of war, they must become skilled also in the elements and arts of peace. The peculiar characteristics of ancient commerce were essentially the same in applicability to all nations, and it was only when the revolutions occasioned by the invention of the mariners' compass, that the foot-prints of ancient commerce became oblivious and forgotten. This great event, in connection with the doubling of the Cape of Good Hope, and the discovery of America, have had more influence on the material destiny of man than any recorded in history. The whole system of former ages became annihilated; the plans and policy of the wisest statesmen of antiquity became frustrated; the passage to India around the southern coast of Africa disconcerted the sagacious rulers of antiquity, and the high way of commerce, for centuries worn by the tread of the camel, became a deserted wilderness. The camel and his load became a dwarfish enterprise, compared with the ship and its cargo. Opulent cities, rendered hoary by the weight of years, were abandoned to forgetfulness and decay, to be known only among the relics of antiquity. Maritime intercourse may date its origin from these discoveries. Foreign commerce commences its conquests here. The inhabitants of the Old World at this stage of its history, discovered that only a small portion of the globe was solid earth, and that new discoveries lay open to genius and enterprise; as a consequence, those dangers which had been carefully avoided, began to be eagerly courted. Scarce three centuries have been dissolved in the crucible

of time since these developments, and what has been the result? It has made England what she is, and developed the commercial power, on which her greatness and success are founded, from which she has learned that among the many wonders wrought by commerce, the most valued discovery is that which admonishes that her best interests are promoted by continued peace. The spirit of chivalry which fanned the flame of war against Napoleon has subsided, and now she can make an alliance with his Nephew, in order to protect that commerce which is the element of peace. Much less is she inclined to seek a third quarrel with her belligerent offspring on the opposite side of the Atlantic, notwithstanding her impertinent dictation. She has learned one lesson if no more—that markets for her productions are not made by destroying or ill-treating her customers; full well she knows that the two wars with the United States, and one with France, have sufficed to engender hostile feeling, which will continue to slumber on, until awakened by the announcement of sufficient cause for a rupture. It was the ships of England that peopled America. It is America's ships that now cause her to be respected, not only by England, but by the civilized world. That aphorism which teaches us that *labor is the only source of wealth*, is more fully demonstrated by maritime intercourse than in any other department of human industry—its consequent wealth is brought from the ocean. For proof of this, we have but to refer to the small amount of landed territory, represented in the great fishing interest of the United States, confined chiefly to a few Eastern towns. It is not the increased intrinsic value of an article in one place over that of another, that puts wealth in the coffers of the maritime community, but the labor performed in the transportation added to the cost of its production, and this labor furnishes the most extensive field to industry, and its legitimate reward, that has yet presented itself to the mind of man. It always yields a harvest of intrinsic wealth, (when entered into understandingly) without reference to the contingencies of rain and sunshine; and whatever difficulties we may encounter in navigating the ocean, arises from our *ignorance of the economy of nature* in reference thereto. If mankind in a civilized state finds upon the solid earth a country adapted to agriculture, sparsely populated—how soon is it colonized, how soon does the political economist estimate the number of inhabitants per square mile it is capable of sustaining? But who thinks of computing the number per square mile the ocean is capable of supporting? Must we look upon the great disparity between the solid and the fluid parts of our globe as a misfortune, or a defect of Infinite wisdom? By no means. It is because the world has not learned the use and utility of that which the presumptive have called a watery waste. The fluid part of our globe is capable of sustaining a far greater population than the earth itself. The entire sea, lake and river coast of the world, is but the site upon which the workshops of commerce were designed to be built, and nothing but WARS have

prevented the development of those laws of commercial life which point to the *ocean as the great civilizer and peace-maker of mankind.* Cover the ocean with ships, and war is hardly possible. It is only when one nation has an advantage over another in this department of human industry, that the selfish propensities begin to exuberate in combative demonstrations against the defenceless. Commerce has also a restraining influence upon those nations that enjoy its benefits; they are less inclined to war, when the interests of this favorite department is to be jeopardized. The national impulses, however belligerent, are influenced by interest, and their better judgment whispers *peace.* The unequal distribution of commerce has been the prolific cause of war, with all its devastating and pestilential consequences. Let the ocean be covered with vessels, and not only will war cease, but navies will be absorbed in merchant ships, and human life be rendered still more secure, because *genius* would be found to be commensurate with its wants, and *science* would be inducted into the art of ship-building. The agriculturalist assumes, that, inasmuch as the first investment in nautical commerce is taken from the earth, that maritime pursuits at best, are but an abridgment of the territorial allotments of Agriculture. Nothing can be more absurd. Commerce widens the fields of husbandry. Of what use to husbandry is the dense forest, beyond that of engendering disease, and contracting the orbit of his legitimate pursuits, unless for the purposes of commerce? By the investment of this part of his capital in nautical commerce, he makes a market for his products, and adds to their intrinsic worth the amount or cost of the transportation at least, and enables him to dispose of his surplus; without this outlet, he would have no inducement to enlarge the boundaries of husbandry.

Sir Walter Raleigh left this aphorism on record: "Whosoever commands the sea commands the trade; whosoever commands the trade of the world commands the riches of the world, and consequently the world itself." More than two hundred and fifty years have passed away since that profound thinker gave utterance to these words, and yet they stand as an undying memorial of the efforts made by British statesmen to secure the supremacy of the seas, and its consequent rewards. The foundation of England's commercial intercourse, of her well sustained commerce, was not laid by building *steamships and obtaining mail contracts of the Government.* The depositories of commerce, like those of nature, have no royal road to their treasury. If we would enjoy the benefits of commerce, we must endure the burdens it imposes. If we would enjoy the blessings it provides, we must perform the duties it enjoins. It would be well for our Southern statesmen and merchants to consider this, while deliberating in their "Commercial Conventions." As the head is the crowning ornament of the entire man, so steamships are the glory of commerce. As there must be a body to sustain the head, so there must be a system of well-sustained commercial intercourse

as a basis for steamships. Ocean steamers are but the representatives of commerce and not the commerce itself, and a line of transatlantic steamships, gotten up as an offset to Northern enterpise, would result disastrously to its projectors, even though Congress should pay an amount for mail service in advance equal to the entire cost of the vessels; within five years they would swallow up not only their income and interest, but the sympathies of the projectors themselves. There is no kind of property so dangerous in a financial point of view as that of Ocean steamers, unless the route is within the compass of well-defined trade and travel, based solely on a legitimate nautical commerce, and the vessels themselves have at least an approximation in their principles of construction to the laws of utility; as Messrs. Cunard, Collins, Law, Vanderbilt, and others, have fully proved. But how shall the purposes and ardent aspirations of our Southern friends be attained, if not in the manner they propose? The highway to distinction, we say, is open to the South by a more safe and convenient route. Let them not suppose that Southern distinction in nautical commerce would, to the least extent, check the maritime progress of the North; it would add to the prosperity of the North and East, as well as the West. The people of the North, East and West would turn their attention more directly to the full development of their own wide extended domain, and to opening new fields of trade, and in such enterprise the South would reap a portion of the harvested fruits, while the Southern people themselves would build up monuments of progress, by commencing their erection scientifically at the *base* instead of at the apex. Let the Southern portion of the United States, particularly that bounded by the Atlantic Ocean and Gulf of Mexico, commence for themselves to develope their own resources, not by exhausting their means and territory in rival railroads for which they have no immediate use, not in building railroads to take from one section of the country to give to another, but in bringing forth from the oceanic highways of commerce those treasures which *nature* has appropriated for the benefit of every clime, to the energetic and independent of every land. When our Southern friends shall determine to use their own commercial resources, of which they are endowed by nature with an abundant supply, then will they find friends and means to assist in the full development of their fertile and well-watered country; then will the Southern portion of the United States become the healthiest as well as the happiest portion of our glorious Republic. While Southern statesmen are denouncing the General Government in its refusal to make a New-York of every Southern harbor—let them remember that the bars of which they complain is the best means of defence that could possibly be built; it determines the size of the vessel in case of war, with which they would in any emergency be required to engage in combat. These bars are the "Cronstadts" which has compelled England to build new fleets, and places her in the ridiculous position of decrepitude in naval operations, her 74's acting as tenders on her gun-

boats. But how shall the shipping interests be sustained without harbors commensurate with the displacement adapted to foreign commerce? We say, build the vessels to suit the harbors, as we would our boats to the vessels that are to carry them. Had England confined her attention to the harbors of the world, instead of those of her own iron bound coast, she would not have been compelled in the time of her extremity to build two navies to get one. We say that foreign commerce may be successfully maintained in ships of 1,000 tons burden and upwards, within 10 feet draught of water, a fact which England is beginning to learn by compulsion, and the United States by enterprise. We have been hood-winked and keel-hauled long enough by the most unjust code of tonnage laws that ever disgraced the legislation of any country. Let our Southern friends make common cause against this heterogeneous relic of legislative absurdity, and pass in its stead a law that will be equal and humane, protect the innocent, punish the guilty, increase the security to human life, and foster the commerce of our common country. We say then, let the commercial advantages of our whole country be developed, that its influence may tell upon the benighted nations, groaning beneath the load of taxation and ignorance. Let not our Southern friends expect to develope their resources by commencing at the interior of the State, and destroy their timber and waste their lands, the one to be converted into *log heaps* to be burned, (as we have seen during a twelve years residence, by thousands of acres,) the other to be laid out in railroads, exhausting the treasures of whole States, involving them in bankruptcy and embarrassment, while the road itself can scarcely pay expenses, much less its cost and depreciation. Railroads, like steamships, must have an advanced state of commercial intercourse for a basis, to make them successful and profitable. To build the road, and then wait for business to come to it, is like going to mill before we sow the seed from which we expect a harvest. The capital invested in nautical commerce requires no appropriation of any man's land. *The road is free;* we have only to *build the car to suit the track,* and the whole world is open to our enterprise. A well organized system of commerce along the entire sea-board of the United States, would do more towards *cementing the bond of union of this Confederacy, than all the compromises* and *provisoes* that legislators can invent.

CLIPPER SHIP "HERALD OF THE MORNING."*

THE clipper ship "Era" will not soon be forgotten by the careful observer of the progress of ship-building in the United States. While it is a cherished notion with many, that nothing has been done toward the advancement of the art, it is the settled conviction of quite as many, that much has been gained, and we are quite willing to be classed with those who believe that something has been done. As the man who has learned to know himself, has acquired the first and most important lesson in human wisdom, in acquiring a knowledge of his proclivities to err, so the era of clipper ship-building has taught us the weakness of our ships, and should not pass unheeded. The lessons learned by damaged cargoes should be salutary and lasting. It cannot be denied that there has been more wealth wasted in clipper ships, directly traceable to an improper distribution of the materials in their construction, than by every other consideration. In the rapid race of competing interests, during the struggle for supremacy, in the size and length of clippers, owners, and not a few builders, seem to have forgotten the alienation they were cherishing between the bow and stern, by the increasing distance between them, and that, without substituting a new bond of sympathy, they would engender discord at the very spine of the fabric. We are glad to be able to present one of the exceptions to this very general rule of construction in the HERALD OF THE MORNING, the lines and spar draft of which accompany this article.

This ship was built by Messrs. Hayden & Cudworth, of Boston, too well known in the ship-building world to require a word of commendation from us. They were assisted in maturing the plans and calculations of this vessel by Mr. S. H. Pook. For her dimensions, see draft.

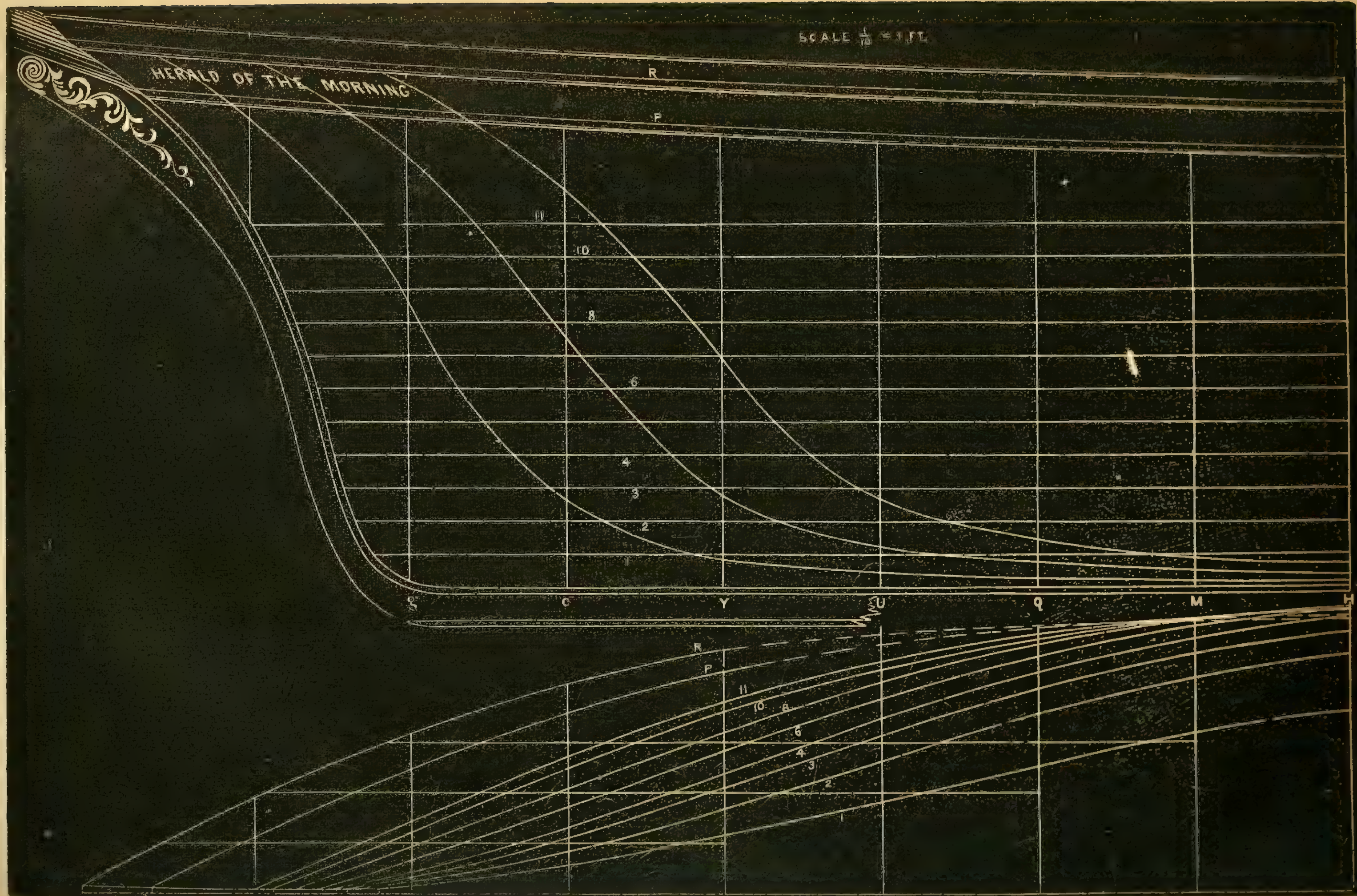
In materials and mechanism, this ship will compare favorably with any of her class. She has a keel of rock-maple, sided 15 inches, moulded 20 inches, and two depths of keelson, of yellow-pine, each 15 inches square. Her frame was selected with care, is of white-oak, floors sided 12 and 13 inches, diminishing to 8 inches at rail. The scantling is 17 inches at keel, 12 in. at floor heads, and 6½ inches at deck, with 4-inch bolts in each scarph. She has sister keelsons, 12 by 12, fastened with 1¼ iron to keelson and floors, also riders, 8 by 12 inches. Her stem and post are white-oak, the former sided 15 inches, the latter sided 15 at keel, 17 inches at main transom, and moulded 15 and 24 inches. The dead-woods are of white-oak, bolted 2 feet apart with 1¼ inch yellow metal, and also with iron, through and riveted. Ceiling of yellow-pine, bottom 4 inches, bilge 10 inches, in two thicknesses, and bolted separately; breaking joints, below lower deck, 6 inches; lower deck clamps, 5½ inches; five strakes, 12 inches wide; lower deck waterways, 15 by 15, with sperketing; two strakes above, 10 by 10 inches, bolted to each timber with 1⅛ bolts, and to each other; thick strakes on deck, 7 by

* For calculations, and performances, see "State Room."

12, let down on beams, 1 inch, and bolted to water-way, 5 feet apart, with $1\frac{1}{8}$ iron. Main deck clamps, $5\frac{1}{2}$ thick, in two strakes. Main deck waterways, yellow-pine, 12 by 12 inches. Lower deck beams, 13 by 15, yellow-pine. Main deck beams, 9 by 13 inches; knees of white-oak, 7, 8 and 10 inches sided, bolted through, and riveted with $1\frac{1}{8}$ iron, three knees to each end of beam, viz: lodge, lap or bosom, and hanging. Deck plank, white-pine, 3 inches thick; plank-shear and rail are each 7 inches thick, of white-oak. She has a deck hook, both forward and aft, on each deck, with three diagonal hooks, also, both forward and aft, coming up to beams, and kneed and well fastened at ends to same with through bolts, of yellow metal. She has a poop-deck, cabin extending forward of mizzen-mast, midships, and nearly to mizzen at side. She also has a top-gallant forecastle, with suitable capstan and bitts, the deck extending nearly to windlass; she also has a house on deck, about 40 feet in length, between the fore and main hatch. The pumps, aft of the main-mast, have composition chambers, and the usual rail around the mast, forward of the main hatch; she has, also, an after hatch forward of cabin, with capstan midway between hatches. The general arrangement is that of utility and convenience; while her performance is commensurate with her model and construction. Success to her.

FAIR OF THE AMERICAN INSTITUTE.

THE twenty-seventh annual fair of the American Institute was held at the Crystal Palace. The exhibition was indeed creditable to the Institution, but the awards were far from being satisfactory to those quite competent to judge who were not interested parties. There seems to have been a want of system in their distribution. Instead of increased security to life, and the economy of labor, being the highest in the scale of awards, we find these qualifications not unfrequently the lowest, while the *fine arts* are always foremost—daguerreotypes, photographs, and ambrotypes are always in the highest grade. This, to us, is an indicator of the depraved appetites of our best men. We find a shovel is awarded with a gold medal, while an improved rudder for vessels, which is both a life and labor-saving improvement, is not even examined, notwithstanding the proprietor was on hand to explain, which was not necessary. We find a peculiar pointed wood screw is awarded with a gold medal, while Jackson's improved capstan is awarded with a silver one; and another, Mr. Pratt's, is declared to be too complicated, without an examination, which would have proved it to be quite the reverse. In the case of sewing machines, it would seem as if the judges had resolved themselves into a Woman's Rights Convention, rather than a committee to set in judgment on the genius and mechanism of machinery; in this instance, they awarded two gold medals, whereas there could be but one entitled if


HERALD OF THE MORNING
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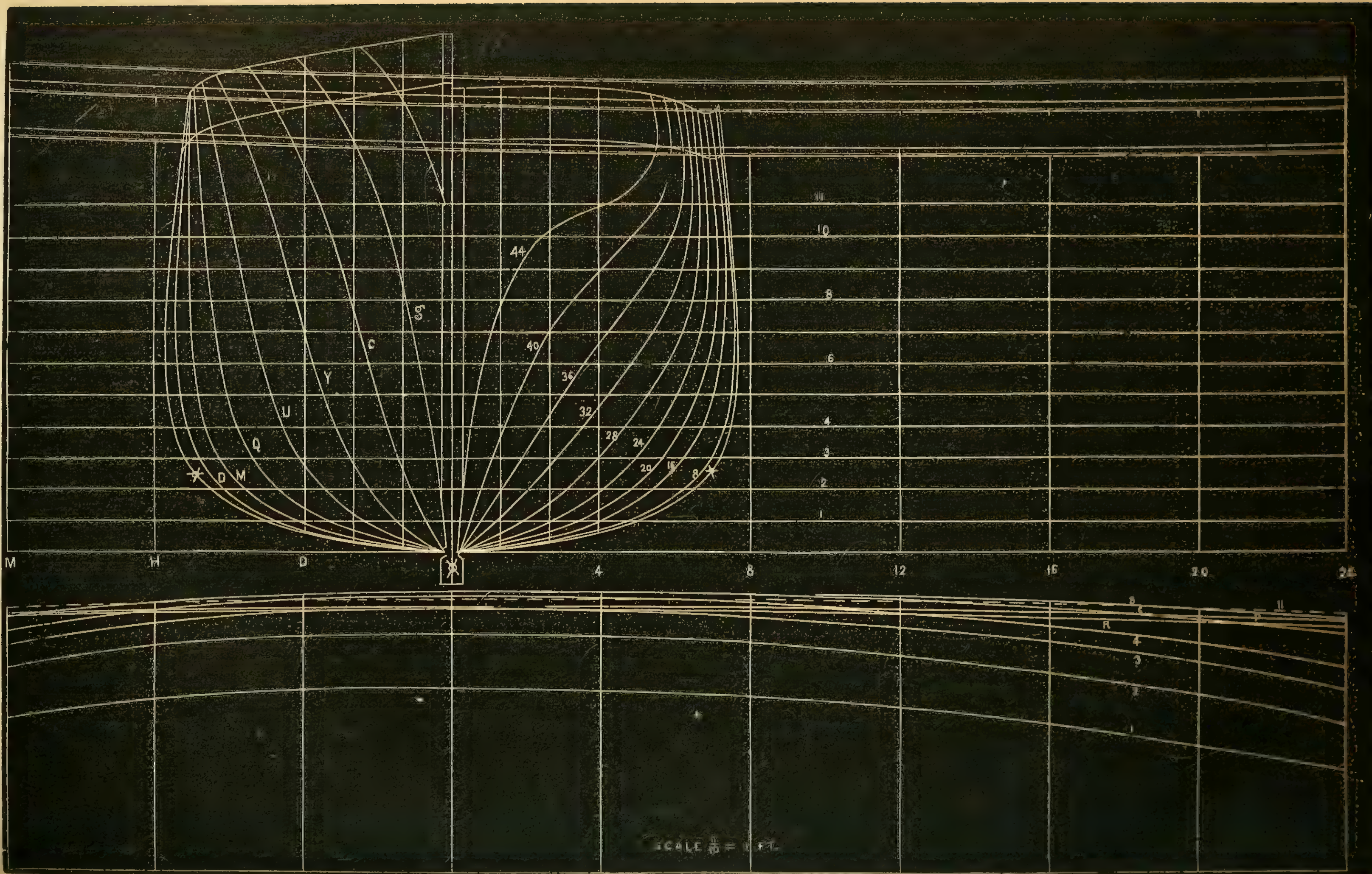
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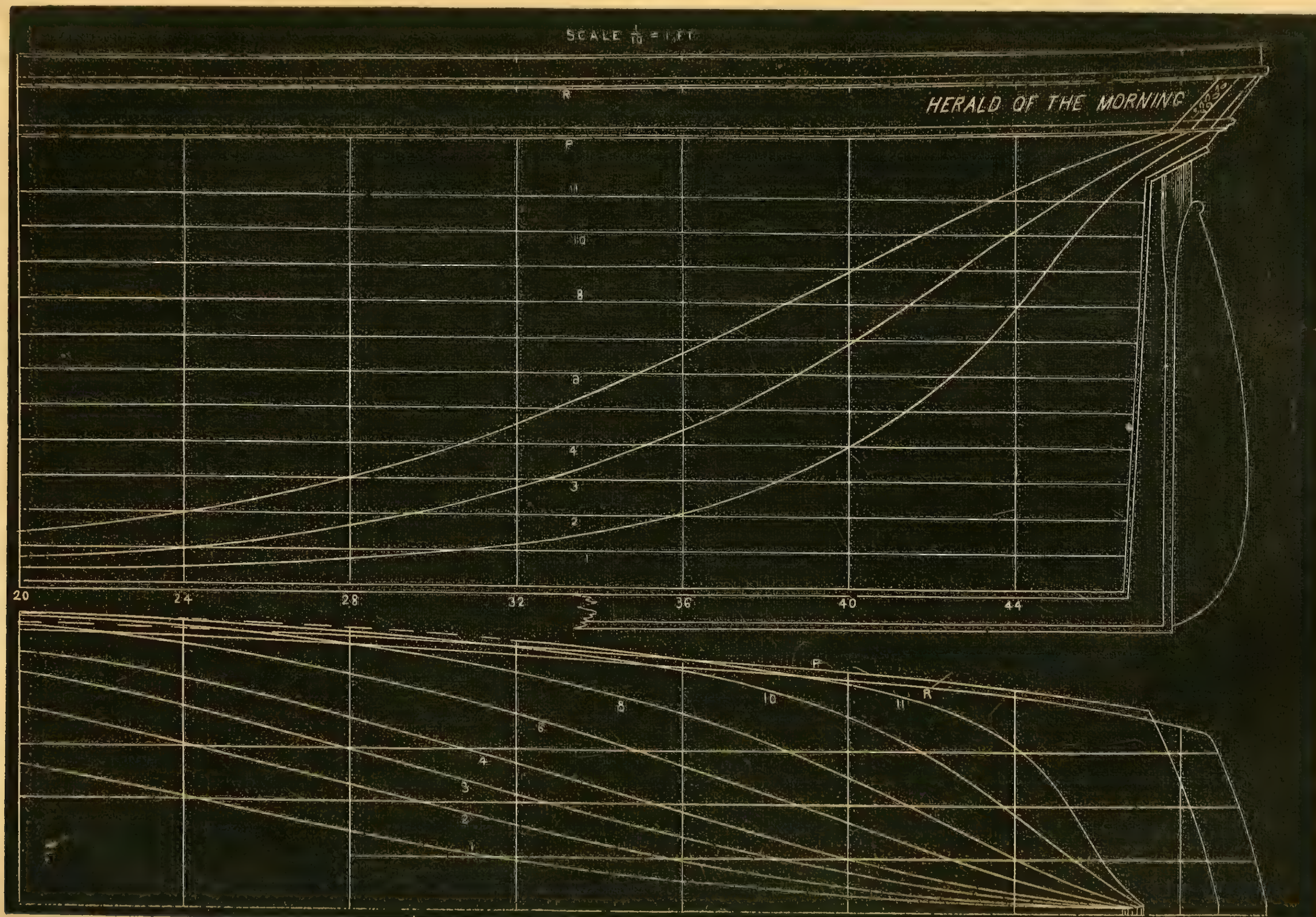
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HERALD OF THE MORNING
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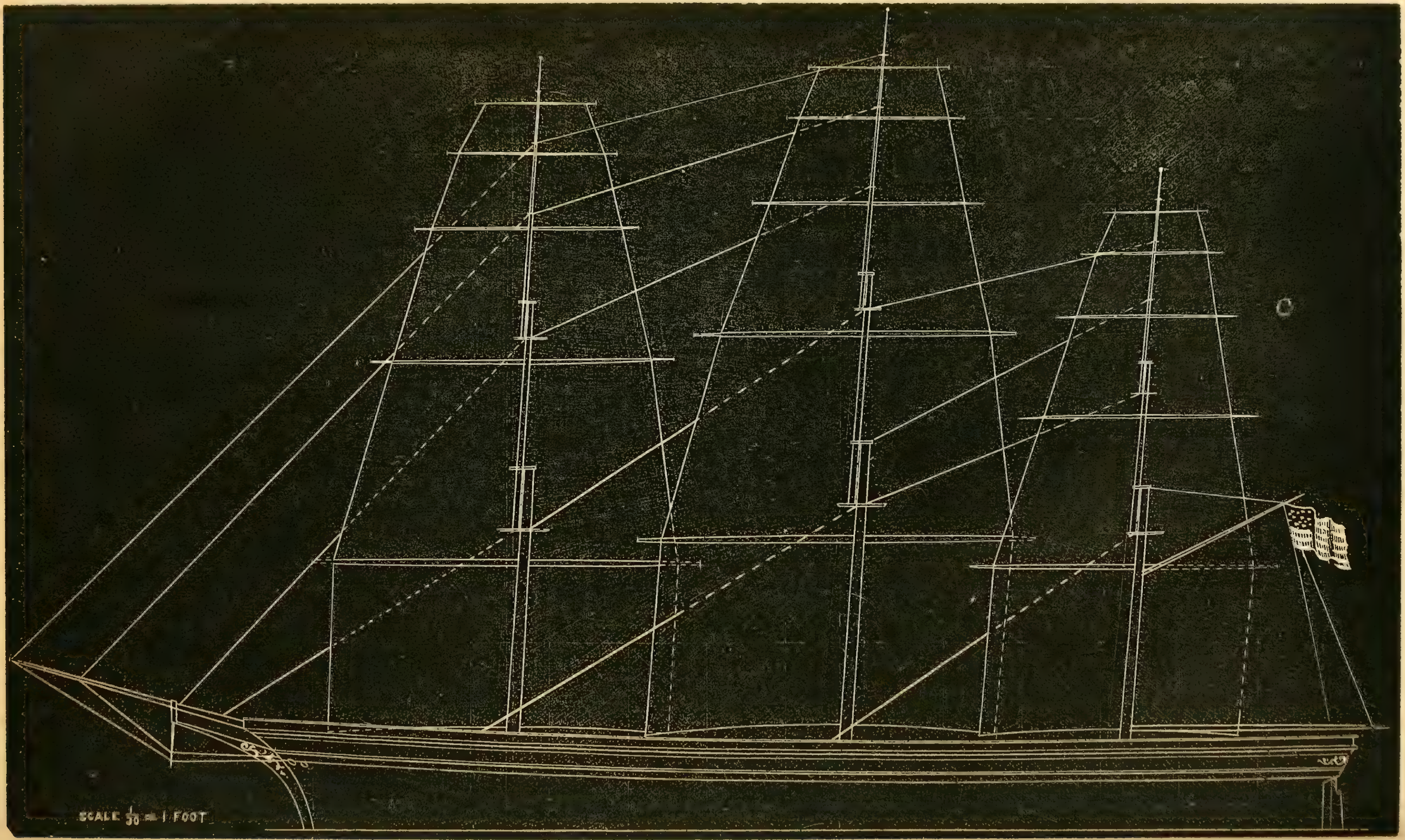
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the question of best had been fairly determined. Again, we find that implements for destroying life are awarded with a gold medal, while those for increasing its safety, on the ocean, are either unnoticed, or sent away with a piece of parchment.

The time has gone by when influence or presumptive imbecility will pass unnoticed in an institution like this. If this institution is only competent to promote agriculture and the fine arts, as its past history has fully proved, then we say, let the inventors and operators in nautical commerce and engineering organize, and ask a charter for another Institute, whose base of operations shall be utility and economy in *life and labor.*

STEAMER PERSIA.

The new steamer Persia, of the Cunard line of Atlantic steamers, from Liverpool, whence she sailed January 26th, arrived here February 10th, making the run in 14 days, 3 hours, and 54 minutes, having been detained 36 hours on account of ice.

This vessel was built by Messrs. Napier, and launched in July, 1855. Her hull is of iron, except the decks; she has accommodations for 260 passengers; and can carry (according to English accounts) 1,200 tons of measurement goods and 1,400 tons of coal. Her displacement at 22 feet draught of water is 5,400 tons, with an exponent of capacity equal to .53. Her dimensions are as follows:—Length between perpendiculars, 360 feet; extreme length, 390 feet; breadth, 45; guards, each, 13 feet; depth, 32 feet; gross tonnage, 3,000 tons; space for engines, 1,221 tons. She is bark-rigged, and has 8 tubular boilers, 2 smoke-pipes, with the engines (which are side-lever) between them. Diameter of cylinder, 100 inches; stroke, 10 feet; diameter of wheels, 40 feet; paddle, 3 by 10 feet; pressure, 20 lbs. Engine-room, whole width of vessel, by 115 feet in length. Capacity of coal bunkers, 1,400 tons; consumption, $4\frac{1}{2}$ tons per hour. Description of hull, as follows:—Keel 13 by $4\frac{1}{2}$ inches thick, scarphed at intervals, the stem and post footing several feet on the keel; garboard strake, 1 inch and $\frac{1}{16}$th thick, extends quite down to the lower edge of keel, and is double riveted. Frames of angle iron, 10 inches apart. In the more central parts of the bottom, their depth is 10 inches, with double angle iron riveted to each edge, designed to answer the purpose of an iron keelson, without projecting above the frames—the most substantial arrangement that could, perhaps, be devised, and occupying no extra space in the hold. There are six plate-iron bulkheads, forming seven water-tight compartments, extending up to the lower deck, with longitudinal divisions, or bulkheads, which add greatly to her strength. The bulkheads have openings, with

water-tight iron doors. In the forward compartment, the frames extend in a horizontal direction, or parallel to the line of flotation. The plating of the shell is alternately lapped in strakes, outside and inside, and not, as is the usual custom, of upper edges inside, and lower edges outside. She has but two decks, (the lower deck is about at the load-line midships), with a saloon-cabin on the upper, connecting the topgallant forecastle, and making a continuous deck of 370 feet in length, and extending to the wheel-houses in their wake.

This vessel has been the subject of much talk in this city, as well as elsewhere; and while there has been the usual amount of bombastic eruptions copied from the British press, there has been but a sprinkling of common sense. She is built of iron, doubtless for two reasons, one of which is that she may escape the service of the British Admiralty during the present war, inasmuch as they have repudiated iron vessels for the naval service; another reason is, that iron vessels in England cost no more than wood, perhaps not quite so much—their iron mines being prolific and labor cheap, while their forests have long since disappeared. Another reason may be assigned, which should not entirely be lost sight of—one (if no more) of the Cunard steamers have had misgivings causing her to require caulking two or three times within a single year; and while this was, in all probability, more the fault of the *model* than of the *material*, it is not a matter of which the agents should boast. It may be that they had determined, in the construction of this vessel, to conquer a peace, and overcome the deformities of the *model*, by the adoption of rivets instead of bolts. Be this as it may, the ship is here, and open for inspection; and we prefer our own eyes and judgment, after her 12·7 days' run, to the encomiums and laudations of the British press. Her dimensions are far from being even passable, and with bad dimensions we defy the most inveterate genius to secure a good model.

We are told by the English press, that her load-line draught is 23 feet 11 inches. This is enough, of itself, to settle the question of speed and good sea qualities of this ship, notwithstanding the papers tell us that she sits lightly on the water. If she were a screw steamer, there might be a pretext for so heavy a draught, inasmuch as a propeller of diameter commensurate with the draught would have kept the slip of the propulsory power in the ratio of the increased resistance, or reduced the slip as the resistance of hull increased. But this is not the case with side-wheel steamers; as the dip of the wheel is increased beyond the bare amount necessary, the power of propulsion is diminished, and is expended in pressure on the water on the forward, and in lifting it on the after side of wheel. It must be plain to every comprehensive mind, that a narrow vessel with side wheels, is influenced with a given amount of cargo in her draught of water, more than a wide vessel; and this very principle is destructive to the efficiency of paddle-wheel steamers. They should be wide, relatively; for length, breadth, and

depth are only relative terms, and yet they determine the safety both of life and property.

With regard to her great length, we see that it has been of no avail in improving the sea qualities of this vessel over others not as long, by at least 100 feet, with an equal amount of breadth. The published abstract of her log, informs us that she pitched heavily in a head sea, and it is not at all likely that the captain of the vessel would have furnished other than facts, in relation to the performance of his vessel. However this may be, it would have been no difficult matter to have foreseen the result, in the performance growing out of such dimensions. Length, when used to advantage, diminishes the draught of water; but here the order of nature is reversed. It is not difficult for a man, not biased by prejudice, to discover that as we increase the length and draught of water, we increase, not only the area of the resistance, but the ratio also. If this vessel drew 18 instead of nearly 24 feet of water, who does not see that, although the displacement remained unchanged, with the same weight of ship and cargo, the resistance on the lower parts of the bottom would be less, in the ratio of the diminished pressure; that is to say, there would be less pressure by the weight of 6 feet of water being removed from every foot of surface of the entire flat of the bottom. With any considerable draught of water we not only have the friction of the water on the surface of the bottom to overcome, but *we have that friction under pressure.* Who does not see that if the PERSIA drew 18 feet of water, with the same amount of displacement, that the resistance consequent upon pressure would not only be greatly relieved, but that 6 feet might be taken from her depth, which would have reduced the weight of the ship, and rendered her motions less sluggish, because the great bulk of this weight thus removed, would have been taken from the ends, which are always heavier than other parts of the vessel of equal surface. By the adoption of an affinity of dimensions and model, an amount of lifting power might be secured in the anterior lines, which would cause the vessel to mount the wave without encountering it with that absolute and arbitrary requirement of parting horizontally and consequent submersion now required, the result of which always is to cause a vessel to pitch. The PERSIA is not a sharp vessel. We have sharper steamers of only about $\frac{3}{5}$ths her length in the United States. We have said that it was possible to build a vessel so long and so wide that she would neither roll nor pitch, but we never did say that a vessel might be built so long and narrow that she would not roll or pitch. If any one is skeptical on these points, let him take the data of the steam-boat New World, before she was *widened*, and compare it with her performance since, or the performance of the steamer Georgia, 140 feet shorter and 3 feet wider than the PERSIA, with 16 feet draught of water. With regard to the material of construction, the English use a cheap indifferent article for building. English iron is nowhere to be compared for strength or malleability to our own, but

in some respects is better than ours for ship-building, it being harder, the bottoms of vessels will not foul so readily in salt water, nor corrode so fast. In iron ship-building, steam does the most of the work; in timber ship-building in this country, the axe does the most. This is wrong; the saw can do the work cheaper and better, notwithstanding the Americans are among the best axe-men on the globe. The idea of an iron vessel, or a wooden vessel entirely, is out of the question. The wooden vessel requires more iron, and the iron vessel should also have an admixture of wood. We know of no entirely wooden vessels, except flat boats on the Mississippi river. Since the introduction of iron vessels in England, we discover no improvement in their models; they seem to be made by the same moulds, expanded and contracted, like shoes upon a last, with the fullest part at the forward end; so is the PERSIA, with the least acute angle of the bow close to the stem, a practice long since grown obsolete among men who value their reputation as marine architects in the United States. Then why all this noise about the Cunard steamer PERSIA. Is it because our proclivities are stronger for foreign than for home productions, notwithstanding the home production is the best? We know that it is too often the case in some things, but it should not be so in ships, unless they are proved to be the best.

FOUL AIR.

THE loss of the lives of 191 Coolies, on board of an American ship, under the most revolting circumstances, should arrest the attention of our legislators, and cause the enactment of such laws relative to the ventilation of ships, as would place the matter forever at rest.

"The ship *Waverly* sailed from China with 450 Chinese laborers on board, called Coolies, it is said for Peru or the West Indies. The captain having died, the mate put into Manilla to bury him. Some trouble ensued on board, when the mate shot two or three of the Coolies and drove the rest below, then went on shore to attend the funeral of the captain. On his return the hatches were opened, when, out of 450 men, 251 were dead from suffocation. The mate and crew were imprisoned."

The iron keelson is the most effectual ventilator of both ships and cargo, extending as it does the entire length of the vessel, while at the same time it is not only less bulky, but may be made as much stronger than a timber keelson as one may desire, or as our experience admonishes us that it should be.

PAPERS ON NAVAL ARCHITECTURE.

(*Continued from page* 351.)

In the reply to the article written for the November number of this Magazine, the writer assumes, that Science is not to be attained or perfected by comparison and analogy. "Science, in the most general and extensive sense of the term, consists in a perception of the resemblances and differences, or the relation which these objects have to one another, and to us as rational beings. To ascertain the almost infinite number of relations which subsist among the great variety of objects which compose the material and intellectual universe, requires an infinite multitude of observations, comparisons, and deductions, to be made by a vast number of observers, placed in various circumstances and positions; or, in other words, the discovery of a great number of *facts.** All science may, therefore, be considered as founded on facts. Perhaps there would be few exceptions to the truth of the position, were we to assert, that the most sublime truths and deductions, on every science, when stripped of all their adventitious circumstances, simplified and expressed in the plainest and most perspicuous terms, may be reduced to so many facts. Now, every comparison we make between two or more objects or ideas, is an act of the mind, affirming a resemblance or a disagreement between the objects compared; which affirmation is deduced from a clear view of the objects presented to the mind or senses, and is the declaration of a fact. When a person, devoted to scientific investigation, discovers a new fact, it is not, in the majority of instances, because he possesses powers of intellect and organs of sensation superior to the ordinary endowments of humanity, but because he was placed in different circumstances, and had his attention directed to different objects, and was thus enabled to perceive relations and combinations which had been either unnoticed by others, or were placed beyond the range of their observation. Genius, then, which is generally attributed to such characters, may be considered as consisting in a concentration of the ways of intellect upon any particular object; art, is science arising from a lively taste we may feel for that particular study.† The discovery of new truths in the sciences, therefore, is not in most instances to be ascribed to the exertions of extraordinary powers of intellect; but in a great majority of cases, to the peculiar series of events that may occur in the case of certain individuals, to the various circumstances and situations in which they may be placed, to the different aspects in which certain objects may be presented to their view, and sometimes to casual hints, and occurrences which direct their attention to particular objects. If this be admitted, it will

* But the writer will not tell us that science is made up of facts. It is a fact that some people guess; hence we might infer that guessing is a science. Science is a combination of principles—"facts" are but the cohesive properties which unite those principles.—[Eds.

† Will our correspondent show us how he arrives at the conclusion that Art is Science.—[Eds.

follow, that the exertion of the ordinary powers of intellect possessed by the mass of society is sufficient for the purpose of prosecuting scientific discoveries, and that the more the number of observers are increased among the inferior ranks of society, the more extensively will interesting facts and analogies be ascertained, from which new and important principles of science may be deduced. The sciences are as yet far removed from perfection. In order to bring to light, as speedily as possible, the undiscovered truths, we must endeavor to increase the number of those who shall devote themselves to its investigation. Would we then accelerate its march far beyond the rate of its present and past progress; let a certain portion of rational information be imparted to the great mass of mankind.

The above hints have been thrown out in order to show, that all science is founded on facts; and as almost every person is capable of observing facts and comparing them with one another, so there is every reason to conclude, that the diffusion of general knowledge, and of scientific taste, and consequently the increase of observers, would insure its rapid advance by an increase of the facts in relation to them, which would thus be discovered."*

Reasoning upon this ground, we assume that the necessary principles to guide us in the science of Naval Architecture, have been in existence for hundreds of years, but our prejudices have hindered us from applying them; and without a basis of facts, it appears impossible to the writer to make a thorough application of them—and it appears to him as one reason why we have not made a greater advance. Although our friend, in reply to the communication given, cannot see how it is possible to adduce a perfect system from a comparison of facts, still it does appear possible to me, that with some such system as the one used by Mr. P., we might form a basis from which we could start onward in our progress; and in order that we may fully understand the principles upon which it is based, we will give a short history of it.

The lines of known good ships, which had accumulated for a hundred years or more, were selected, being the work of the various architects in the known world. These were analyzed and compared by simple rules. Their qualities being known, it was found that ships of similar qualities had similar forms, and were balanced in the same manner; and, in making the comparison, it was always found that when the same person designed two ships, his horizontal lines would always run parallel; and although the remaining lines might cross in every direction, still the horizontal lines of one architect would never cross in the same class of ships.

* It is also a fact that almost every man, in the most intelligent communities, has access to an Almanac, and may prove the correctness of the Solar predictions, by waiting for the time to arrive, when he pronounces it to be a *fact*. Does this make the man an astronomer? And if he were to collect these *facts* from all the Almanacs which have ever been made, would he be better informed on the science of Astronomy, than when he began to gather these *facts*? Would not this mode of studying the science of Astronomy be a rule of thumb operation?—[Eds.

Afterwards, numerous comparisons were made of all the principal ships of the day as fast as they could be obtained, and the same law was still good; all the best ships had similar lines, and balance of ends. When we say best, we mean the best sea-boats, good working, a proper capacity to answer the object intended, and a swift-sailing, able ship. From these comparisons has been deduced a diagram which will give any person, wishing to study the science, a sure guide in making forms for ship's bodies, inasmuch as the constructor can, from the figures, make any form of line he may see fit to select for his design—round, oblong, convex or concave lines.* It is, in fact, a perfect machine for forming curved lines, whether for ships or any other scientific purpose.

From this perfected figure, which is the result of an infinite number of comparisons and observations, were afterwards produced tables of data, by means of which any person using them can see at a glance the result of his labors, and be ready for a new trial and combination at once. Being a perfect figure, all his calculations can be, and have been, worked out as logarithms, by which in fifteen minutes after selecting his lines, his calculations are all worked out for capacity, stability, buoyancy, and gravity, thus saving an immense amount of labor to the student.

Now, we would be exceedingly obliged to the persons who do not consider this a proper basis to proceed in our researches, to give us as clear an explanation of the basis upon which they work, for if there is a better theory than this, the world wants the benefit of it.† Assertions are not, and can no longer be taken for reasons: we must have proof. When a man says, it is better to have his bow sharper than his stern, the assertion does not make it a fact: we must have the proof to substantiate it, and comparative facts accompanying it, or reasonable men cannot receive it for truth. Neither does casting a sheer upon any man's system, or method of pursuing his work, destroy his system; but it must be attacked in a reasonable manner—bringing evidence to bear upon his senses, and reasons from which he cannot recede. We certainly cannot expect revelations without method in working a basis of science in facts; no revelations can come without order and a systematic arrangement of those facts. In this reply, we would also call the attention of the writer to his assumption, that the form governs the dimensions.‡ Now, without comparison, experiment, and analogy, how is it possible to decide what are the proper dimensions requisite to the adopted form? Must we work this nondescript form from chaos again, then commence guessing at the proper dimensions assumable to it, and having made this, begin our calculations when the work is finished? It certainly appears

* Or adopt any man's rule of thumb he may see fit, without the development of a single principle in Science.—[Eds.

† Will our correspondent abandon Mr. P.'s rule when we show him a better one?—[Eds.

‡ And is it not a *fact?* Does our correspondent deny it?—[Eds.

to me, that form and dimensions should both correspond to the design in view, which must ever alter with the requisite circumstances; and to make a ship fast, is not to make a ship perfect.

The perfect ship fully answers the purpose for which it was designed, at the time when the design was made. And, shall we say, this puts an end to progress? By no means. We have all the incentive possible to advance. Mr. P's. system gives us the greatest possible latitude, and instead of erecting barriers, they are all taken away, and the mind left free and unshackled from any previous works; and no person can use it without seeing its beauty, and the great assistance it is to guide in forming. It is, in fact, what its originator claims—an assistant in forming ships.* PHINEAS PETT.

WRECKS:

THEIR CAUSE AND MEANS OF PREVENTION.

No. II.

IN our last issue we published, under the above title, such remarks in reference to the cause and prevention of shipwrecks, as were calculated to awaken an interest in this, as well as in every commercial community on this side of the Atlantic, at least to the *dangers, not of the sea, but of the ship.* We shall, in this number, give place to an article prepared by H. Boynton, Esq., upon the same subject, statistically arranged, and only regret that it did not appear when it purports to have been written, in the summer of 1855, and only now appears as the leading article of the "Merchants' Magazine," in February, 1856, buried beneath an inappropriate head. Being on a HUNT among commercial exchanges, we fell in company with the article in question, and, divesting it of its unsightly caption, deem it worthy of a place in the magazine.

For three consecutive months, early in 1853, the "Pacific" waters uttered their voice of alarm and instruction, by the total loss of three valuable steamships, and the sacrifice of over one and one-fourth hundred lives of our citizens. In the last month of the retiring year, the Pacific's voice, in the total loss of the Winfield Scott, and the Atlantic's, speak through the Humboldt and the San Francisco, affixing the seal to these instructions, *as to the improvident state of our steamships*, not only by the loss of these three and much merchandise, but by the sacrifice of over two hundred lives.

The sum total of 1853, makes five steamships stranded and totally lost; one disabled, abandoned, and lost at sea; and with two out of the six, over three-and-a-half hundred lives perished with the wrecks.

The Atlantic waters introduced the losses for 1854, and March utters her

* By confining the future within the orbit of the past, without the development of a single principle of science.—[EDS.

lesson by the City of Glasgow, and about four hundred and eighty lives; July by the Franklin, which was stranded and lost at the door of our harbor; September by the City of Philadelphia, stranded and lost; and in hot haste, the Arctic, with hundreds of lives, sinks to rise no more. History can never portray the horrors and sorrows with which memory imbues the mind that has witnessed, or listened to witnesses of, this sad catastrophe. Immediately succeeding these two September losses, the 1st of October speaks from the Pacific, through the total wreck of the Yankee Blade, and nearly half a hundred lives.

We sum up for 1854, three steamships stranded and totally lost, with much of their very valuable cargoes; and one that sunk to bury its own history; and another that sunk to stamp its history indelibly upon the minds of the commercial world.

We have the sinking of the North Carolina, in a few minutes after her collision, for April, 1855, and just before she reached her destination in a foreign port; also, in the same month, we have the stranding of the Golden Age, and may we not hope that the lesson of her imminent peril with eight hundred passengers, and (what is, perhaps, more significant to some) one-and-three-tenths millions of specie, with the fortunate and providential rescue of all, may prove a "golden" lesson to this "age," and the more especially since the projector and president of this line stood upon her decks an eye-witness of her perils, her exigencies, and her improvident state.

During a period of twenty-six months, twelve of this class of steamships were totally lost, and one more "scarcely" saved.

The nine *stranded* ships, at the time of their casualties, had an aggregate of over five-and-a-half thousand persons. They also possessed a value in bottomry of over two-and-one fourth millions, and in specie and merchandise of six-and-one-fourth millions; hence, a total of over eight-and-a-half millions of dollars was thus jeoparded.

The four sunk at sea *jeoparded* over sixteen hundred lives, and over two-and-a-half millions of property.

The thirteen *jeoparded* over seven thousand lives, and over eleven million dollars of property.

The twelve lost ships cover a total of over twelve-and-a-half hundred lives lost, and over three-and-one-fourth millions of bottomry, and over four millions of merchandise and specie, showing an aggregate of over seven-and-one-fourth million dollars of property *lost*.

The history of the four lost at sea is deeply written in the memory of all, except that of the North Carolina, which sunk in British waters, and was hardly noticed by our daily press; nor will the history of the San Francisco, the City of Glasgow, and the Arctic, be untold in the future, as among the sad calamities of steam commerce.

A summary of the nine stranded steamships may be shown as follows:

Name.	Date.	Hour of day.	Locality. Atlantic and Pacific coast.	State of Weather.	State of Water.	Speed.	Remarks.
Independence	Feb. 16, 1853	5¼ A. M.	Reef one mile from shore of Margaretta Island, off main land, north of Cape St. Lucas.	Light fog or clear.	Calm.	Usual rate.	Backed off the reef, and, leaking badly, she was run four miles and beached in a sandy cove. One hundred and twenty-nine lives lost.
Tennessee	Mar. 6, 1853	9 A. M.	On Tagus Beech, 3 mls. north of the "Heads," off San Francisco.	Thick fog.	Calm.	Standing off and on.	Struck at a small angle, and, swinging broad-side on shore, close inland, could not be got off.
S. S. Lewis	April 9, 1853	3 A. M.	Went ashore, 3 miles north of Balinas Bay, ¼ mile from shore, and 4 miles from the wreck of the Tennessee.	Thick fog.	Calm.	Ordinary or moderate speed.	She was backed off and ran ashore on the beach, one hundred yards distant. Totally lost by the breakers.
Winfield Scott	Dec. 2, 1853	12 P. M.	Anacapa (or Enceapa) Island, off the Coast of Santa Barbara.	Dense fog.	Calm.	Ordinary or moderate speed.	Not removed. Remained several days in same position, fast by her bow on the rock.
Humboldt	Dec. 6, 1853	— A. M.	Struck a reef off Sombro Light, below Halifax, Nova Scotia.	Supposed dense fog.	Fair.	———	Backed off, and ran ashore 10 miles below Halifax, four or five feet water in hold.
Franklin	July 17, 1854	7¾ A. M.	Struck on an outer bar off L. Island Beach.	Dense fog.	Fair.	Full speed.	Could not be got off. First night drove over outer, and on to inner bar. Totally lost.
City of Philadelphia	Sept. 7, 1854	11 P. M.	Struck a reef off Cape Race, New Foundland.	Dark and rainy.	Calm.	11 knots.	Backed off, and run seven-and-a-half miles, to Chance Cove, where she was beached. Fires put out by leakage.
Yankee Blade	Oct. 1, 1854	3½ P. M.	Struck a reef, three-fourths of a mile from shore, off Point Arquillo. Weather calm and could see shore plainly after the ship struck. Tried, with passengers aft, to back off; also with passengers forward; but could not. She struck running at full speed.				
Golden Age	April 29, 1855	2 A. M.	On reef off Island of Quicara, and opposite Island of Quibo, off Costa Rica.	Cl'r moon.	Calm.	14 knots.	Backed off, and run ashore in three miles distant cove. Saved and repaired.

These are among the great costly *experiments*, the expenses of which are diffused to a great extent by virtue of the system of marine underwriting among the mass of our commercial men, and if their important instructions are properly improved, notwithstanding their cost, they *will prove an advantage* and profit to our commerce, but if *unimproved*, they constitute a " dead loss" to individuals and to the nation.

We may remark:

First. That these nine cases of *stranded* steamships were each and all *avoidable.*

It is plainly evident from the facts in each case that the respective ships struck the reefs or shores, that were to peril their life, in perfect obedience to the command, the helm, and the engine.

Two of these, the Independence and the Winfield Scott, seem to have been considerably out of their proper reckoning, and more especially the latter.

The Independence made land at one o'clock in the morning, when her true course was clear of all land at sea; yet the weather was fair and the sea calm, so that this departure from her true course was the more inexcusable.

The passengers censured the captain for the manner in which the ship was permitted to strike the reef, (the nearness to the island being known,) and say that the morning was perfectly clear, and that he was warned of the danger.

We find from this narrative, given by the captain, that he passed Cape St. Lucas on the morning of the 15th inst., and that at noon, from a copy of the " National Observatory Charts," she was close to land, and he says he was set in shore by the currents, though the breezes for that day were strong from N.W. to N., which would have inclined him a little off shore. He made main land east of Margaretta Island, at 1 A. M., 16th inst. Changed to S.W., and made the Island at 2 A. M., bearing W. by S. Altered to W. S. W., and at 5¼ A. M. struck within one mile from shore.

He touched at Acapulco. It is not, therefore, obviously excusable, *in fair weather*, to make the main land, one side of his course? but particularly when in waters unfrequented by steamships of deeper draft than the coasting cruiser, after he made the main land, *he should have run with all possible caution.*

The Winfield Scott, when about one-and-a-half days from the port of San Francisco, struck on Enceapa Island, and if at noon one day after she left she was fair on her course, it is very obvious that she made a wide digression from it during the next twelve hours, with a calm sea, though there was a dense fog at the time she struck. The *apology* is the one that is stereotyped in character—" the effects of currents must have contributed to the accident."

While, therefore, these two *wrecks might have been avoided*, it is not equally obvious that censure should not attach to them, for the lives of 600 passengers, and specie reckoned by the million, should not be *periled*, off from frequented routes, without a *justifiable* reason.

The Yankee Blade, ten months after the Winfield Scott was lost, followed too closely her example, and struck in mid-afternoon on Point Arguillo, to the northward of the tomb of the Winfield Scott. A passenger thought he saw land half an hour before she struck, to which the captain replied, "they were twenty miles from land." But the steamship Southerner, bound north, passed the Yankee Blade some time before she struck, and afterwards met the Goliah steamship, bound southerly, in the route due to the Yankee Blade, when the Southerner spoke the Goliah to keep a lookout for the Yankee Blade, as, from the course she was steering, she would probably strike land. Hence the Goliah kept close in shore, and to her we must accredit hundreds of lives saved, which otherwise must have been inevitably lost.

Two others, the Tennessee and S. S. Lewis, were just north of the "Heads," off San Francisco; and the *want of common prudence* in the Tennesssee in "laying off and on," from 3½ A. M. to 9 A. M., in a dense fog, within reach of a possible drift ashore, when the weather was fair for her to lay off clear of such possibility, *is too obvious* after the casualty. The S. S. Lewis should not have forgotten the lesson of the Tennessee, about one month previous, and have gone inexcusably ashore within a few miles of her.

Two others, the Humboldt and City of Philadelphia, were quite too far north of their due and safest course, unless it was their intention to visit Halifax, in which case the Humboldt was not far from her reckoning, and yet her casualty *was obviously avoidable by due caution*, when not under stress of weather *in approaching the land*. A reference to the chart routes for steamers, as given by Lieut. Maury, shows the City of Philadelphia considerably north of her due course. She had six days fair weather *with good observations*, previous to the two cloudy days preceding her casualty, and it is proper to suppose, in that time, any variation of compasses *should have been correctly determined.*

The stranding of the Franklin was avoidable in different ways; and although her true course was approaching the coast, she was unduly near the shore; and the dense fog would have made reliance upon her lead more essential, whilst it would certainly have warned her of her danger.

The stranding of the Golden Age was easily avoidable, had she kept fairly outside of the small island of Quicara. The shortest route inside of the island, after passing the island of Montuosa, cuts closely the N. W. point of Quicara and the southernmost point of the island of Quibo. With a good moonlight morning and calm waters, the extreme caution always

due to a narrow channel hedged about by reefs, would seem to have rendered this casualty perfectly avoidable, even in the channel between the islands.

History will say to the future, that not one of these ships was unavoidably lost. Not one of them was injured when in her proper place. No thundering storm or lightning's darts—no unwelcome or overpowering winds harmed them, or drove them from their routes of safety; but, under the most perfect obedience to the command, to the helm, and the engine, they were imprudently stranded; and these facts are living witnesses to teach the consequences of the non-observance of all possible caution, and its absolute necessity as a means of universal safety.

We may properly notice—

Second. That after each collision, each respective ship was unprovided for such a casualty.

Seven of the nine stranded vessels struck their *bows on*, and received *there* their chief damage.

The Independence struck her bow on, and tried to get a sail forward and under her bow to stop the leak. The facts as to the S. S. Lewis are very incomplete, but it is probable she struck her bow on, as it is said "she backed off and touched her stern and was run ashore on the beach." The Winfield Scott struck her bow on, then her stern, then her side, carrying away her rudder. As she finally fastened upon the rocks and lay for several days, (eight-and-a-half days or more,) she had eight fathoms water under her stern. The Humboldt struck her bow on, and it was broken off from the "11 feet" mark down, and ten or fifteen feet of the keel gone—bottom perfect, except the bow. The City of Philadelphia struck a rock on her port bow near her cutwater, having deep water on all sides. She broke a hole in the bottom of her bow, and turned about eight feet of her stem. Tried to stop the hole with oakum and blankets. The Yankee Blade struck her bow and slid some distance upon the rock, with stern in deep water (nine fathoms). Her stern sunk rapidly, and it is not improbable but that she was considerably strained amidship, for in fourteen-and-a-half hours both guards broke forward of her wheel-house; and during the second night, or between thirty and forty hours after her collision, she went to pieces. Lastly, the Golden Age struck her bows fair and full, "brooming" her stern badly, having two-and-a-half fathoms forward and seventeen fathoms amidship and aft. Into this breach the water rushed rapidly, causing her to settle aft when she backed off. She now steered wildly, coming to too much, she struck a second time. Probably at this second time, the damage afterward discovered along her bilge and under her fire-room was received.

It is very obvious that, generally, the bow of a ship is first exposed, and more generally much the most exposed part of the ship.

We may rationally conclude from these facts—practical lessons as they are—that strong bulkheads forming water-tight bow compartments were absolutely essential to the safety of these seven ships.

But it is not sufficiently evident that such bulkheads alone would have been absolutely sufficient to have saved them. The experiment of the Vesta with the Arctic would warrant the belief that the Independence and the Humboldt would have been saved by such provisions. The City of Philadelphia was built of iron, and this language is used in regard to her: "The forward compartment of the hold was soon filled to the water-line, and she had hardly got into shallow water ere the second compartment was flooded." No reason is supposable why the forward compartment may be tight to the water-line, and not sufficiently above that line to meet any extra immersion due to the filling of this compartment.

Had the Golden Age been thus provided, the rush of waters that possessed all with fear would not in like manner have occurred, and she would have backed away from the reef, and with much more care have avoided those after damages due to the second collision.

The Winfield Scott hung her bows upon the rocks for eight-and-a-half days—and how much longer we are not told, but it is probable that she needed other remedies conjointly with this, in order to have saved her. It is more than probable that the S. S. Lewis and Yankee Blade received serious midship strains at the time of their collision, so that from the insufficient accounts in detail of their actual damage, there are many doubts whether common remedies would have saved them.

I am aware that the necessity for water-tight compartments is, to a certain extent, beginning to be met by ship-builders. The City of Philadelphia had her water-tight compartments, but was lost; while such compartments saved the Vesta. The Persia—the mammoth iron "Cunarder"—has her seven water-tight compartments; so has the Arago, and the Fulton (soon to be launched) their several water-tight compartments;* so, too, the Adriatic whose keel now stretches her long length upon the stocks, will probably have them. But it is proper to know by the instructive wisdom of the past, ere it is too late, if these are being developed in their best, reliable, and required manner.

Third. The improvident state of our steamships is further shown by these experiments, in the absence of adequate and reliable steam pumping apparatus.

The inadequacy of pumping apparatus by steam power is seen in the short time in which the fires of the Independence, City of Philadelphia, and Golden Age were extinguished, and in the steady rise of the water in the Humboldt, the Winfield Scott, and the S. S. Lewis.

* These compartments are of wood, instead of iron, and consequently are liable to shrinkage, and neither water nor fire-proof.—[Eds.

These cases also furnish the evidence of the irreliable character of their steam power for these purposes.

When the ship is perfectly seaworthy and uninjured, there is little necessity for the use of pumps; but this does not militate against an absolute necessity when she is strained and leaky in any of her many timbers and planks, or iron plates. And pumps that are adequate for a sound ship, *are not adequate* for a damaged ship. Here are eight stranded ships that confirm this truth (and the San Francisco and the Arctic add two experiments to the truth.)

There is no mechanical use to which steam power has ever been so economically applied as to pumping. The actual duty of raising three thousand tons of water twenty feet high—sufficient to discharge any ordinary ship—has been performed by one hundred and twelve pounds of coal. But this is a much more perfect use of steam and fuel than is possible on shipboard, and for these emergencies. All that is required to discharge water from the hold of any ship, is simply to lift the atmosphere from a vertical pump cylinder, (just as we would pump by hand for any height under 32 feet), and the water will flow out by the pressure of the atmosphere upon the water outside of the pump. Therefore, the most simple pump possible for this purpose is the most effectual, economical, and desirable.

The duty of raising water from a vessel, according to the rapid influx of water after a collision, is in character like raising water from a mine in great quantities, to a like height—though we may not wait to use the steam so economically upon the vessel. Hence, to introduce for such duty the "jim-crack-pumps" of the day, (if we may be allowed the expression, without condemning them for other duties,) is just as absurd and detrimental, as it would be to introduce them into the European drainage duty. Hence, the quantity and rapidity with which water may be raised from the hold of a vessel need only be limited, in our steamships, by the capacity of pumps and their connecting machinery—the pumps being on the simple principle used a thousand years ago.

Fourth. We must next consider that a reliable steam power is just as essential as adequate pumps.

The fires of the Independence were extinguished whilst she could run four miles under extra steam pressure generated by wood and boards. The Humboldt was run ashore with four or five feet of water in her hold—the time after her collision is not given—soon after she struck. The City of Philadelphia's fires were extinguished after a run of seven-and-a-half miles; and the Golden Age's, in about half that time. The fires of the Arctic were all out in less than an hour. Here, then, are five experiments, teaching the absolute necessity of an adequate furnace, protected and available under any influx of water, though she be filled to her upper decks.*

* The Ocean Bird was so originally designed.—[Eds.

Had the first four cases been a little further from land than their actual distance, in which they were scarcely saved, then, with their sum of 2,000 passengers, they might have quadrupled the horrors and sorrows of the Arctic.

But there are good and valid reasons to show that these four lost ships might have been saved if each had had pumps adequate to her tonnage, with reliable steam power.*

Again, with adequate pumps, not extravagantly large, and reliable steam power, it cannot be denied but that the Arctic *might*, and probably would have been saved. This idea will be received skeptically; and the limits proper for this paper will not allow the presentment of the considerations due to the Arctic's case, or to the other cases, adding that of the Golden Age. I may partially present some general considerations:—

1. If we estimate the number of cubic feet of water due to the hold of the ship until the fires would be extinguished, deducting the solid building materials and other solids pre-occupying much of the space, and it is an easy duty, common duty of a small steam power to discharge this quantity of water in the respective times in which it was received into the ship. It is absurd to suppose that such a duty as this will be performed through the small pipes of our common force-pumps. If it be desirable to sacrifice these noble ships, and the hundreds of our fellow-citizens they carry, and to grossly squander the steam power for the economy of the space due to adequate pumps in which the water may flow freely from the ship's hold under the single pressure of the atmosphere, then reasoning in such a case is vain.

2. Again, adequate pumps and reliable steam power are absolutely essential to proper efforts to stop the holes or leakages in cases of collision.

I have mentioned four experiments which sustain this truth. The time expended in the cases of the Independence, City of Philadelphia, Arctic, and Golden Age, in attempting to get sails over the bows to stop the leaks, and also by other means in the case of the City of Philadelphia and the Arctic, was in each case but a short time, and it was less than thirty minutes in the Arctic's case. The hurry, alarm, and confusion during these few minutes almost necessarily precludes proper efforts. Each case needed more time, needed better preparations, needed a fair and well-arranged trial —perhaps needed more trials than one, or two, or three. Well-designed efforts only could have answered; but these they could not have without reliance upon adequate pumps and steam power. Fractured parts, sinking inward or projecting from the surface, and eddies and counter-currents about the holes, may prevent the materials from going home to the holes, or the sails from reaching or hugging the sides of the holes; and such difficulties can only be met by trials, and overcome by persevering efforts.

* Tonnage is not a reliable criterion, it should be displacement.—[Eds.

But such proper efforts could not be made, for these stranded ships had, nominally, nothing to rely upon but the beach. No idea seemed to exist upon the Arctic that she would float nine times as long as they were attempting to stop the leaks.

The construction of the sides and ends of the ship at and near the bottom, together with the pre-occupancy of much of the inside bottom space of the ship by solids, render the first influx of waters apparently much greater than they afterward prove to be, when the diminutive tonnage capacity of the bottom of the hold is even so quickly filled as to produce considerable alarm; and yet neither of these four steamers received 1,000 tons of water per hour, whilst a 21-inch cylinder, having a continuous flow of water at the velocity of these steamers' pistons, would discharge from their holds 1,000 tons of water per hour—requiring but a small part of their power of steam. Such pump cylinders can be constructed so as to be used as water-tanks, though available as pumps the moment such an exigency should arise.*

3. With adequate pumps and reliable power, these stranded ships could approach the shores where they were beached, and have cast anchors from their stern, when they could have made suitable efforts to have temporarily repaired their damages. With such reliances, the confusion and alarm that resulted in the burning of the Independence would have been avoided.

Again, with such means the evidences of the shamefully improvident state of the Humboldt would not be put upon the pages of history, to contrast with the otherwise noble ship. Parties in New-York to a very valuable ship and 1,319 packages of valuable goods, or their underwriters, are instructed by telegraph from Halifax that "pumps would be of service, but there were none here." Again, parties at Halifax, as agents or interested owners, are instructed by telegraph, that since pumps, steam pumps, would be of service on a damaged or leaky ship, they shall be started by a special steamer from New-York. Two days, or forty-eight hours, after the casualty, and four or five days after the ship has suffered for the want of them, they will reach the ship ten miles below Halifax!

But parties in New-York are further instructed by telegraph from the ship, "that if they (the pumps) should arrive whilst the wind continued to blow from the south, as it then did, that the ship could be freed from water, and taken up to Halifax."

To expect that Providence would insure fair weather and south winds for several days, that the neglect of sending the Humboldt and such steam-ships abroad upon the Atlantic without adequate and reliable pumps, might be covered, and the ship saved, is expecting more than prudent men, and a want of sagacity on the part of underwriters, are justified in expecting. Hence, the noble Humboldt was lost.

* The lower end of the masts and the keelsons would do all this if of iron.—[Eds.

In an other view of this case and her improvident state, we learn that a day-and-a-half after her collision, her damage—excepting the flooding of cargo by water for want of pumps—consisted in her bow being "broken off from the 11 feet mark down, and about ten or fifteen feet of her keel gone." "Bottom perfect except the bow." Taking this actual damage, fair weather, and calm sea, into account, and had she had adequate pumps, it would be insulting an able commander to say, that she would not have been taken to Halifax—her cargo saved undamaged, and the ship repaired.

The City of Philadelphia's Diver's and Engineer's Report thus describes her damage: "An iron plate started off the whole breadth and turned back three or four inches." "Two other plates either started or carried away." "She had about eight feet of her stern (iron) turned." With adequate pumps, reliable so that fears as to her fires might not have alarmed them, and it is evident that with temporary aid by sails over her bows, she could have gone to St. John's, N. F., in safety.

In the case of the Golden Age, temporary pumps had to be constructed and worked by hand.

Troops and passengers on the San Francisco labored by "baling gangs," as a poor substitution for steam pumps, until the ship was so much lightened as not to need them.

The Arctic had three holes pierced through her side—two below the water, and one about 18 inches above. The surveying officers thus describe the largest of the two below the surface of the water about two feet, "to be $5\frac{1}{2}$ feet in length, and 1 or $1\frac{1}{2}$ feet in width." Now, if we take $1\frac{1}{4}$ feet as the average width of this largest hole, and suppose the smaller hole (size not given) to be half this size, then the two would equal 1,485 square inches. This area, clear and free, would admit 8,000 tons of water per hour; hence, her timbers were not cut away, and the area for the influx of water was by no means so large as was represented; and with adequate pumps, the hole above, and both holes below the water, could then have been temporarily repaired at once, and the Arctic could have been saved.

It is possible that adequate and reasonable pumps might have saved the City of Glasgow. But all is speculation in regard to her; but her loss, with nearly 500 lives, without our knowing by what means she might possibly have been saved, is an admonition which cannot be slighted to warn us to adopt every possible means of safety.

From these several considerations, enforced by these heavy losses of life and property, guilt certainly must attach to our commercial men if our steamships are sent forth without reasonably adequate pumps and an adequate furnace to work them, protected from any influx of water.

Fifth. The instructions by virtue of the loss of the Tennessee and the Franklin, are of a somewhat different character; yet they show a required provision in addition to the means of safety we have before considered.

The Tennessee drifted broadside on shore and was lost; and for want of reliable facts, which, so far as they go, render her case similar to that of the Franklin, we shall not further examine her case separately.

The case of the Franklin is peculiarly instructive, and shows forcibly the unavailable character of our system of marine propulsion in times of trouble, and its inefficiency of propulsion.

The Franklin, in July, 1853, struck the sandy beach of Long Island while running at a small angle to it, so that she lay nearly broadside on. For several hours after the Franklin struck the bar, she made no water, and made none beyond the control of her pumps for 24 hours; hence, she passed two high tides, having full control of her steam. But all this time her powerful engines were of little or no service nominally, and their propelling power to back her off was not equal to the strength of a single hawser, though the power upon her pistons was equal to that of 2,000 horses. The great power of steam she possessed within herself she needed above all things else to move her off; but it was wasted, just as a powerful dog wastes his muscular strength in swimming. To a "horse-power" upon her piston, she had but about half an oar blade's surface of paddle to act upon the water; that is, the water could only resist a horse-power of her engine half as much as it resists a man's power in rowing, or to a man's strength upon her piston, she only has a surface upon the water equal to the flat of a man's hand. Hence, she could paddle constantly and waste her power, just as a man would paddle in a row-boat with his hand to move her off the beach, or with an oar, the blade of which was the size of his hand.

The sacrifice of such a ship, free from leakages for some time, on an easy, sandy beach, with a power inherent in herself to have moved her off at once, or at the farthest, by the first high tide—a power against which the surf was nothing, should arouse in commercial men a spirit of investigation—for knowledge is power—that they may know *why* her powerful engines were so perfectly useless. It is a question of far more than ordinary importance; but it is not my purpose here to answer it. Commercial men cannot treat it indifferently, else the loss of another Franklin and another Tennessee will teach them the consequences of delay.

The arrival of several steam-tugs off the Franklin about a day-and-a-half after her casualty, when every surf was rendering her position worse and worse, unable to attach a single hawser to her, shows the worthlessness of such aid sometimes, and oftentimes, and the fallacy of relying upon it. But, like the Franklin's own propellers, they, too, are feeble; for any two of the average of them might have tugged hour after hour through a single new hawser, and their highly respectable engines could waste their power in the currents of water they produced. But they were sent back, unable to save her or to assist her.

It is unnecessary for me in this paper to go further into the history of this noble ship.

Investigation, fair investigation, will prove *why* the Franklin, so to speak, was as "helpless as a fish out of water;" why she was lost. I say fair or consistent investigation will show this. *Exparte* investigation may have no tendency to show it. The captain had a reputation to defend; the builders of her engines and propelling machinery have a high reputation to defend—both, therefore, will "speak soft words" and soothing counsel to those who sustain her financial loss; but the ship dies an easy death on their hands. Her noble hull lies day after day on the sand to have her strong timbers and irons rocked slowly asunder, that her easy, yet certain death may charge home upon her financiers the imperfections of her propelling system.

The officers in command and men at her helm are responsible for her departure from her route of safety; but when once upon the beach, however inexcusable the cause, it does not save the ship.

Therefore, another responsibility accrues, and that responsibility now rests with her powerful energy of steam upon her pistons to save the ship. No destructive storm or wind drove her here upon the beach—her officers, helmsmen, and engines drove her there; no destructive storm or wind now troubles her. An inland current of two-and-a-half knots per hour and the ocean surf alone trouble her. But what are these to the mighty power upon her pistons? Look at the tremendous strength of her propelling beams!—smaller or less strong levers could not resist the mighty motive energy actuating her pistons. Be careful further to observe, that if the friction due to her removal from her bed of sand with the receding current from the surf, equals the strength of a single hawser, the mighty energy actuating her pistons cannot remove the ship—cannot save her.

The strength of her piston levers, or working beams, are measured in weight of metal by tens of tons; but the motive power which requires this strength is so wasted—shamefully wasted—that its resultant action upon the ship does not equal the strength of a hawser.

The loss of the Franklin was a very costly experiment to test the merits of our steam propelling system—to test its mechanical merits. But the failure of this experiment is a more degrading failure than that of the experiment by the Ericsson. Here we have a known power, and cannot develop it in the motion of the ship. The Ericsson experiment simply attempted to *generate* the known power which the Franklin possessed. The Franklin experiment had a known power and known data well established; the Ericsson experiment had only the laboratory experiments of chemists as data upon which to establish or develop a motive power equal or superior to the Franklin's power, or the power of steam. The Ericsson experiment was foolish or impolitic in its so costly design upon uncertain data; the Franklin experiment must be very costly—perhaps it must be repeated, in order to fix or draw the attention of the men who sustain her losses, or their agents or representatives, to these facts which I have stated.

The Tennessee taught the same lesson and the same failure. She drifted slowly on to a narrow beach between two high cliffs; she gradually worked herself into the sand and could not be removed. Could this fine ship have used her steam power, as every ship ought to be enabled to use it, she could at once have extricated herself.

These two important cases show a necessity for reform. They prove a failure to discover any merit in our mechanical system adapted to their exigencies. But the Tennessee and the Franklin are lost, and they discover, too late for their own relief, the extraordinary inefficiency of their propelling system.

If we pass from the nine stranded steamships to the other four totally lost, we notice the third class of experiments.

The San Francisco, City of Glasgow, Arctic, and North Carolina, each and all were unprovided for their respective exigencies.

There was such a combination of causes in the case of the San Francisco, that a pointed lesson to any one cause may be evaded by making the other causes the "scape-goat."

One thing is obvious to all who belonged to her "bailing gangs," organized soon after she encountered the storm, that her two "donkey pumps," and her hand pumps, were in no proper idea adequate to the casualties such ships are heir to. She was, not long after, greatly lightened by the loss of much of her upper works, and, sorrowful to tell, by the loss of many lives —one hundred or more persons by a single wave—so that her "bailing gangs" were thus relieved.

On the afternoon before she met her fatal storm off Cape Hatteras, with all sails furled and calm sea, she made eight-and-a-half knots per hour. She was insufficient—not for want of power of steam, for she had a sufficiency at her command to have known no harm from such a storm—because the power of her steam was unavailable. But various causes intermingle, in properly considering this fact, inconsistent with the limits of this paper, and I leave the subject.

What, if anything, could have saved the City of Glasgow, is shrouded in mystery, and the inquiry can only be answered speculatively. Nevertheless, we may not neglect for every such steamship each and every precaution, or preparatory provision, against disaster due to any other known causes, for any one of them, or all such provisions, might possibly have saved her 500 lives, cargo and ship.

The Arctic came in collision with the Vesta. Wisdom had foreseen the liability of the Vesta to such a disaster, and prudently provided her for it, and she was saved. Her "bows were completely carried away;" hence, the captain of the Arctic, judging from the improvident state of his own otherwise more noble ship, supposed she would sink instantly; but she was lightened forward, and made some additions to, and strengthened her bulk-

head, when she made her nearest port, St. John's, N. F., for full repairs, in safety.

A much less apparent damage was received by the Arctic, but she sunk in four-and-three-quarter hours. I have before spoken of her holes, of her want of pumps, of the great relief reasonably adequate pumps and reliable steam-power would have rendered her. Indeed, it cannot be denied but that such pumps as she ought to have carried might have saved her; it is rather reasonable and probable, to any person who fully understands her actual damages and the pumping power of steam, that appropriate pumps—appropriate to her tonnage, to her dangers, and simple in construction—would have given confidence to officers and crew, and citizen passengers, so that appropriate efforts would have been made to stop her leaks, and that such efforts would have been successful, for her holes below the water are not described as forbidding to any person who understands, or can explain, the difficulties attending their stoppage.

It is true, that with two twenty-inch vertical cylinder pumps, each working with half the velocity of the Arctic's pistons, with reliable steam-power to have lifted the air from them, there is no improbability but that the Arctic, and the lives she sacrificed, would have been saved.

To fully repeat the description of her holes, and review the inadequate efforts to stop them, I find will be too lengthy for this paper, yet there are instructions from a full examination that ought to be imparted to all commercial men and the traveling public.

Why was the Arctic lost? Set aside the questions arising from the fog of nature, from the management and competency of life-boats, and why did she make a premature watery grave to herself and hundreds of the beloved and noble-hearted from among us? Pass these questions—instructive questions if analyzed—as the news items of the day are passed! pass them *unimproved* or *misimproved*, and repetition—fearful repetition—will stamp our commercial men as incompetent to the exigencies of the age!

We have shown the stranding of nine steamships, with the total loss of eight of them and the imminent peril of the ninth, and the total loss of four other steamships at sea.

The general instructions drawn from the nine stranded ships are—

1. That each and every casualty to these nine stranded ships was *avoidable*. Hence, the loss of each of the eight ships, and the peril and damage to the ninth, constitute a breach of trust to a certain degree, or an evidence of incompetency, or want of prudence or vigilance, on the part of the captain, or under officers, or the helmsmen, respectively or conjointly. It is obvious that the captain's orders may be strictly correct, and their imperfect execution may cause the casualty; or the orders may be slightly incorrect, and their perfect execution may cause the casualty.

2. That the fact that all these casualties occurred during the late night or

early morning hours—from 11 P. M. to 9 A. M.—excepting that of the Yankee Blade, teaches a necessity for a particular vigilance and prudence in the commands, and execution of commands, during the "dead hours" of the day.

Hence, proper prudence should always teach the commander, under officers and pilots, that if there is the least possible inclination or deviation in the commands, or execution of commands, from a strict chart course of safety, or if there are doubts as to the strict course, that the inclination, deviation, or action, in doubtful cases, should always be on the side of safety, or seaward, and never on the side of hazard.

3. We learn the improvident state of this class of steamships; or that after each collision, each respective ship was unprovided for such a casualty.

Also, that neither of these stranded ships need have been lost after the collision, had they been well provided, excepting the S. S. Lewis and Yankee Blade, and possibly the Winfield Scott.

These thirteen cases show the improvident state of our steamships in four classes, three of which are remedied. Eleven out of these thirteen cases show the absolute necessity of remedial. Eleven out of the thirteen experiments were failures on the part of the steamships to show themselves provided—reasonably well provided—for the dangers of ocean navigation.

Eleven out of the thirteen point out and teach the nature and practical character of the remedies; and they teach the probable success of these remedies in eleven-thirteenths of these casualties.

They also teach the almost certain success of these remedies in nine out of the eleven *probable* cases.

The first class embraces the positive instruction of nine of the ships out of the thirteen as to the necessity of reasonably adequate pumps, (not one of the ships possessed them,) and reliable steam power, (unknown to every ship.)

This necessity was absolute and independent in the case of the Arctic; it may have been so also in the case of the City of Glasgow. This remedy is conjointly necessary and shown immediately after the casualty, in the cases of the Independence, S. S. Lewis, Winfield Scott, Humboldt, San Francisco, City of Philadelphia, Yankee Blade, and Golden Age.

The second class embraces the positive instruction of four cases out of the twelve, as to the absolute necessity of bulk-heads, forming water-tight bow compartments. These bulk-heads should be high enough to protect the hull of the ship from the influx of the water, in any case of flooding this compartment. These cases were the Independence, Humboldt, City of Philadelphia and Golden Age.

It is extremely probable that this necessity was absolute in the case of the City of Glasgow.

It was a remedy conjointly necessary in the cases of the S. S. Lewis and the Winfield Scott.

The third class embraces the positive instructions of the Tennessee and the Franklin, as to the insufficiency of the propelling mechanism to remove a ship from a sandy beach, sound in all their parts, under the full virtue of their steam-power.

This class embraces, also, instruction from the Independence, Humboldt and Golden Age, conjointly with the other necessities ascribed to them, to show the rapid diminution of the propelling power of their wheels, by the increased depth of immersion due to the influx of water to their holds. If we suppose that these ships had been a little beyond the reach of land, and the Arctic nearly within the reach of land, then the rapid loss of power required to propel them ashore, by the quickly increased depth of immersion, would have become an important consideration.

The fourth class has the single case of inevitable loss—that of the North Carolina. To this question, her essential history, so far as I have seen it, is thus written :—"A collision took place between her and the ship Robert, and from the severe damage the steamer sunk in deep water in ten minutes." Therefore, none of the remedies we have considered would have possibly saved this ship, except her damages had been like those to the French steamer Vesta, which was damaged by the Arctic carrying away her bows, so that she would have sunk in ten minutes, excepting for her bulk-head, which saved her.

In view of these costly experiments, their most obvious instructions, and the considerations of their easy, reasonable and practicable remedies, (excepting the remedy for the Tennessee and the Franklin, which is not here investigated,) proprietors of steamships, builders and commanders, traders, underwriters, the Chamber of Commerce, the traveling public, and the community at large, should utter, as with one voice, the recommendation of every probable remedy ; and much more imperatively the adoption of these most obvious remedies.

This voice should be heard in relation to every steamship in process of building, or which shall be built, that these remedies may be inwrought into her, just as necessarily as her keel or her masts. The imprudence—gross imprudence—of sending a steamship on her ocean exposures without these remedies for her common dangers, is not secondary to the obvious imprudence of sending them without masts and riggings. Indeed, the case of the Collins steamer Atlantic is the only important experiment I now call to mind, since the establishment of that line of our international steamships, where this provision was absolutely essential and available to safety.

It is also highly proper to recommend and urge the adoption of these remedies, so far as possible, as fixtures to our present steamships ; and so far as adequate remedies are impracticable as fixtures, that they should be pro-

vided as temporary resources. This may be practically carried out by every steamship to a very greatly increased safety over their present dangerous predicaments.

The success attending temporary remedies, a temporary bulk-head and temporary pumps, constructed after the Golden Age's disaster, urges and enforces the considerations not only, as we have shown, for permanent remedies, but for temporary remedies to every steamship afloat, where fixed remedies may not consistently, in full or in part, be provided. So far as permanent fixtures should greatly incommode the present arrangement of the ships in the "lines," they can be made and fitted temporarily so as to be, to a great degree, available in case of need. Had the Golden Age have had ingenious, judicious and wise prerequisites for her casualty, how greatly would she have been relieved from the extreme peril that hovered over her!

I have before spoken of the Persia, but we should not pass the Arago, nor the more modern Fulton, soon to be launched upon our waters—the latter showing the most improved development yet made by American skill for protective buoyancy in case of damage by collision, and for protection to her fires and machinery;* but these are only primary steps, and, though valuable independently, they are essential conjointly with the other remedies shown and demonstrated by this series of varied experiments, all of which should be thoroughly and reliably investigated, and properly developed—reliably developed—ere commerce shall have added to her debit account millions again expended to enforce, by repetition, her imperative instructions.

My chief object is to show a necessity for remedies in a large majority of these losses, and the very practical character of the remedies.

This series of experiments, consecrated by Providence to the advance of commerce by the sacrifice of ship after ship, are endowed with no ordinary lessons of wisdom; and shame and folly will stamp their index upon the commercial organizations that shall let them pass unheeded and unimproved.

These thirteen steamships had over seven thousand lives on board, and sacrificed, as a tribute to the importance of these events, over twelve-and-a-half hundred lives, or 18 per cent. of all; while many others were saved as by "hair-breadth" escape.

Independent of this invaluable sacrifice of life, they possessed a tangible value in property of over eleven million dollars, and sacrificed as a tribute to the elevation of commerce, over seven-and-one-fourth million dollars, or 66 per cent. of all.

Let the constituents to this loss calculate the labor and time due to the recovery of this amount by the net profits on their succeeding business, and if possessed of sound financial talent they may appreciate the propriety, if not

* They should, however, have been of iron, and are neither fire nor water-proof otherwise.—Eds.

the necessity, of devoting some labor and time to obviate the embarrassments due to such heavy losses.

It is to day truly said, that more than seven-and-one-fourth million dollars have been expended, within two-and-a-half years, through a single class of steamships, to show practical men, and underwriters and their constituents, the wisdom of introducing remedies to stop these disastrous losses, for they will continue to occur until remedied by them; or it is truly said that we are appropriating two million nine hundred thousand dollars annually to educate our most sagacious Wall-street and South-street financiers as to the true relation of improvident steamships to the dangers of the sea; and it is highly proper to ask them which alternative they will now adopt, whether they will learn from the past and remedy these losses, or whether they will appropriate two-and-nine-tenths million dollars for the lessons of the coming year of steamship casualties.

Owners of ships and merchandise may look to, and fall back upon, underwriters, and underwriters may look to, and fall back upon, a high tariff of premiums; but these enormous losses will attach somewhere, however subdivided, and they are "dead losses" to the commercial community, and especially to the underwriting constituency; and they will be a lasting stain upon the energies of our commercial men, a perpetual shame upon their neglect to profit by "precept upon precept," as enforced by example after example, if such teachings are not speedily embodied into practice, and if reform does not speedily elevate the system above these sad and frequent calamities.

Two other considerations should be urged:—

1. In relation to our canvas ships; they, too, are sent forth improvident in relation to the dangers of the sea.

Ship after ship is stranded and lost; ship after ship founders at sea; ship after ship is abandoned on account of leakages,* and a fearful number are lost and never heard from. These are *common* casualties, and the remedies are alike common. We can meet these exigencies only by steam power. We must elevate and improve our steam system. Then steam will be as economical to the canvas-ship as masts and rigging are to the steamship; and steam will be more absolutely essential to first-class canvas-ships than sails are to steamships—indeed, it will be much more so. This question cannot here be fully examined, but it should never be dismissed, until the reform it contemplates shall be fully established. This reform cannot be established upon the present system of using steam, because it does not meet the exigencies of our steamships, and it cannot meet the demand due to the intelligence of the age, until it is elevated by a radical reform. Hence, until then, it cannot meet the exigencies of our canvas-ships.

There is an imperative call for a radical reform in steam and canvas ships, for their protection from disasters, and their increased efficiency, based upon

* Consequent upon longitudinal weakness along the line of their keel.—[Eds.

the instructive fact, that for the two-and-a-half years last past, the tax upon the insured has not indemnified the insurers. That is, the "tariff of premium rates," which the judgment or conscience of the Board of Underwriters would allow them to inflict upon the insured, has been insufficient to meet the losses upon the property insured. The aggregate losses suffered during the last financial year of the respective companies of the Board exceed twelve million dollars. Or, if we take the published annual statements of several of the best established and most prosperous companies of the Board, they show that the relation of assets to liabilities (as represented by premiums) has been materially lessened since the close of the year 1852. They also show that the aggregate deficiency in assets, or the amount essential to make the assets bear as favorable a per centage or relation to the liabilities on policies, as represented by premiums, January 1, 1855, by the Atlantic, Atlas, and Union; October 15, 1854, by the Sun; April 4, 1854, by the Mercantile; July 1, 1854, by the Commercial; and March 15, 1855, by the New-York, as at the beginning of these financial years, ending at said dates, exceeds two millions three hundred and sixty thousand dollars. Or, deducting the increased amount of "certificates" issued on the business of the preceding year, over the amount of certificates paid from the assets at the close of the preceding year, and the interest at 6 per cent. on the increased amount of "certificates," and the deficit for the years ending as above, exceeds one million eight hundred and sixty thousand dollars; which amount is an aggregate loss to said companies, or to their real public standing. Hence, the insured have not sustained for these years, by a large amount, their underwriters. Obviously, the virtue of these facts should be manifested, to investigate their cause, to remove their cause, to instruct as to their proper remedy, and to reform the disastrous system by the absolutely essential improvements.

2. In relation to the fearful loss of life, or *inhumanity* of our present systems.

It is humane to take measures to save life, after ships are hopelessly wrecked, from such ships as may come within the reach of aid along our coasts, such aid as "Life Saving Associations" and government, may or can render. But this is a short arm of relief, and can only be extended to a few out of the many cases; and further, it is always too late. These measures, established and approved, are proper as the ultimatum of all other means.

How much more essential and rational is it, to put a remedy or remedies on board of every valuable or passenger ship. Save the ship from coastwise dangers and disasters, from the damages of threatening and overpowering storms, from the waters which rise up within her, and you save cargo, in full or chiefly, and the thousands of lives now prematurely buried in the ocean grave. The losses of one year are under the common causes of the losses of another year. The horrors of total shipwrecks this year will be

but a repetition of those of last year. The facts may be more fearful and lamentable, yet we hope otherwise. The obvious and practical remedies which the past teaches would have saved the ships, had they been devised and available, will now and hereafter save them, if devised and appropriated.

Can any man of good sense, understanding, and judgment in these matters, say they cannot be remedied? Most certainly not. The obvious character required, the certain efficiency, and the practical and available nature of the remedies, will condemn him as wanting either in practical understanding or sound judgment in these matters. Any one may say what has not been done—we all say it to our shame and regret; but every one should beware how he says that such things as are required cannot be done. Better say—"What ought to be done, can and shall be done." If we reason from the inactivity and disregard of these exigencies by the past, and their patience under sufferings, and doom the future commerce to like sufferings, we reason from instructive lessons and premises to shameful and degrading conclusions.

I am aware that certain commercial questions have been discussed, conclusions and instructions set forth. The large number of vessels abandoned at sea has caused the reasons for and against scuttling them to be investigated. For so much as the Navy Department of our government has performed directly for the interests of our mercantile marine, we have cordially extended thanks; and the wise supervisory management by Lieut. Maury has been appreciated and acknowledged.

But greater questions and greater improvements remain to be determined and established, because the casualties and exigencies of our ships remain to proclaim them essential to commerce's higher prosperity.

In view of the facts embodied herewith, it is not an unimportant consideration to know if the Representative Board—elected and sustained by the commercial men and interests of our city and country to protect individual losses by a proper tariff of taxes upon all, thereby to extend the greatest possible encouragement and sustaining influences to our mercantile marine—shall prove to be the "undertakers" (Oceanic Cemetery Undertakers) of the real and highest interests of commerce, by their passivity under these astonishing facts.

Individual interests and enterprises, whether sent forth by the strong arm of steam, or with their wings to the wind, to contest with the dangers of every sea, except for the protection by this great financial reservoir of Wall-street, would long since, by their own imperative necessities, have protected themselves against these common losses by introducing their common remedies. But their duty and responsibility are transferred, and they are taxed on account of the transfer. Hence, their otherwise obvious duty of looking after, preventing, and protecting themselves against these common casualties, rests upon their Representative Board of Underwriters.

This Representative Board has a combination of interests to look after, and they have adequate resources of facts and of knowledge which none others equally possess; therefore, the principle of transfer of responsibility to representatives is good. The Board which assumes the transfer of trusts, assumes the responsibilities due to the system. I believe, therefore, that they cannot be passive to these common casualties, and be blameless. Their direct prosperity and the higher interests of their constituents forbid it; and the enormous sum of their aggregate losses, under which they now groan and are burdened, forbids it. Let us cherish the hope that they will recover from their lethargy, that an agency for reform shall be known on their part, that that sanitary influence which they above all others can extend and develop, may be felt, and its blessings enjoyed.

Although this paper ascribes the great responsibility of the present imperfect system, and the responsibilities due to a reform, to the Board of Marine Underwriters and our practical commercial men, it is thus placed with all deference to the Chamber of Commerce. This "Chamber" is New-York's *honorary body of commercial men*, and the improvident state of our steam and canvas marine look to this body as their ultimate hope that sanitary influences may recover them from the "plague spots" under which they now suffer; and that they may now cast upon our marine commerce the mantle of their honorary influences, that the practical servants of commerce shall not sleep while the storm of shipwrecks is rushing over them; and that their popular influence may be felt, to prompt, to demand, and insure proper action on the part of the commercial enterprises and organizations of the day. H. B.

CONVENTION OF LAKE UNDERWRITERS.

At a Convention of Lake Underwriters, held at Buffalo, Jan. 8, 1856, Mr. J. L. Weatherly was chosen President, and D. P. Dobbins, Esq., Secretary. The subject of inspecting and classifying hulls, in connection with the rates on both hull and cargo, was referred to a committee, for whose adopted Report we give place:—

The Committee recommend, That the Association employ competent Inspectors, to be paid and engaged exclusively for the common benefit of the Associated Companies. That such expense be paid pro rata by the Companies, in proportion to the navigation premiums received by each Company, including both hulls and cargoes.

That one such inspector be located at Oswego, who shall inspect vessels on the River St. Lawrence, from Ogdensburgh to Kingston, inclusive on the Canada shore, and to Genesee River, inclusive on the American side.

That one be located at St. Catharines, having charge of the rest of Lake Ontario, including the Bay of Quinte, and the Welland Canal to Gravelly Bay, exclusive.

That one be located at Gravelly Bay, having charge of the north shore of Lake Erie to Detroit River, including Chatham.

One at Buffalo, having charge on the Niagara River, from the Falls to Erie on Lake Erie, inclusive.

One at Cleveland, having charge from Erie, not inclusive, to Black River, not inclusive.

One at Toledo, having charge from Black River inclusive, to Monroe inclusive, including all the islands.

One at Detroit, having charge from Monroe, exclusive, to Mackinaw, inclusive, covering also River St. Marie, Saginaw, and the east shore of Lake Huron.

One at Milwaukie, having charge at and from Milwaukie to Mackinaw, exclusive, and covering Green Bay, Fox, Beaver, and adjacent islands.

One at Chicago, having charge from Milwaukie, not inclusive, of the remainder of the lake, including the east shore, Skillagalee, and Manitou Islands.

That a Secretary be elected at Buffalo, whose duty it shall be to keep up correspondence with the several inspectors, to whom all reports of the inspectors shall be addressed, who shall attend to all printing, and other business connected with and necessary to carry out this plan of classification and registration.

He shall furnish all the companies connected with this Association, a register, in sheets, containing the weekly reports of the inspectors. If two or more inspectors report on the same vessel, if it affect the grade, he shall follow the majority of the reports; if a tie, he shall make proper inquiry, and determine the grade, and register accordingly by his vote.

If two surveys of the same vessel disagree in her class, the Secretary shall state the disagreement to the two inspectors, and on receiving their explanations, he shall determine her class.

The register shall be printed and furnished to the Associated Companies, as fast as received by the Secretary, and be charged in the general expenses.

That this Association elect an Executive Committee of three, to whom, in case of neglect of duty by an inspector, the Secretary shall report the same, and it shall be their duty to remove such inspector, if they deem best; and they shall have power to appoint a Secretary, in case of resignation or death, or in case they remove a Secretary for neglect of duty, which they be, and are empowered to do. The Executive Committee shall fill its own vacancies; and fix time and place of annual meeting of this Association of Underwriters, *and call the same through the Secretary.*

Companies may complain of inspectors to the Secretary, and he shall notify the Chairman of the Executive Committee in writing; and the companies may complain of the Secretary to said chairman, in case of neglect by him.

The companies, at their annual meeting, shall elect the Secretary and Executive Committee, each company represented giving one vote, and the Secretary shall choose the inspectors, subject to the approval of the Executive Committee. All vacancies in the *inspectors* shall be filled in the same way.

The Executive Committee and Secretary are instructed to employ for inspectors thorough and highly qualified men, who shall devote their whole

time to their duties, and that the inspectors be paid liberally, from not less than $800 to not exceeding $1,500 each per year.

That the actual expenses of the inspectors while travelling shall be paid; an account of which and of their salaries shall be rendered to the Secretary monthly, and shall be audited by him and the chairman of the Executive Committee, and passed if they deem correct.

That the companies of this Association be assessed monthly, by the Secretary, for all expenses incurred, share and share alike; and that his sight draft therefor, countersigned by the chairman of the Executive Committee on each company for its share, shall be presented and honored monthly, until the first of January, when the several companies shall report to the Secretary their Navigation Premiums, arising from the Lakes and River St. Lawrence business, when the expense shall be equalized by him in proportion to such premiums; and all excesses or over-drafts over the proper share by such ratio, paid by any company, shall be refunded by the Secretary, through drafts as above provided on companies, which by their amount of premiums had paid less than their proper share of the expenses.

The general powers and duties of the inspectors are defined as follows:

1st. To make surveys and inspection of all vessels now being built or moored in their respective beats, and to report weekly to the Secretary. They shall commence their duties by the first of February.

2d. They shall examine and inspect all vessels that come into their respective beats during the navigation season, as far as possible, and report as set forth.

3d. Whenever a disaster occurs in the beat of any Inspector, he shall repair to the spot in person, if possible; if not, he shall send a competent man, and notify the company or companies of the Association having risks on said vessel, and he shall keep close supervision of the whole property, and render such aid as he can, until the company having the risk can send its own wreckers. He shall inquire into the circumstances of the loss and the management of the master, and report to the company or companies having the risk, if he think it will conduce to their interest. The companies to furnish each inspector with a list of its whole risks as taken, which they shall hold as confidential from all persons.

If casualty happen in the adjacent beat of any inspector, he hearing thereof shall telegraph the proper inspector, and he shall proceed and render the same assistance, as if in his own beat, until relieved by the proper inspector.

The expenses of the salvage, and expenses of the inspector and his time, at the rate of five dollars per day, on such occasion shall be charged on the property, and he shall give the Association credit on his salary for what he so receives on his time.

The expense and time of the substitute, if any, to be charged by the party, and by him collected on the property, if practicable; otherwise from the companies having the several risks.

Your committee recommend the following as general rules for the classification of all vessels:

Three classes, A, B, and C.

Two sub-divisions to each class, to wit:—A 1, A 2; B 1, B 2; C 1, C 2.

DEFINITIONS.

A 1. Model good, not over three years old, well timbered, fastened and found in all particulars, ground tackle heavy, each chain 90 fathoms long, after 1st of August, or grade shall be reduced; if flat built, two *good* bilge pumps and pumps fore and aft, and chain plates properly fastened to the timbers, below the plank sheer. Well clamped, knees of crooked timber, and arched if over 250 tons Custom House measurement, or its equivalent of thick ceiling and edge bolted.

A 2. Same as A 1, in all respects, but *over* three years old, and not over six years old, sails, rigging and ground tackle good.

Sharp built vessels to have two good pumps, one forward and one aft, and not required to have more pumps.

No vessel *past* six years old, however well *rebuilt* or repaired, shall be placed in Class A, nor one that is over-sparred, or hogged, strained from *stranding*, *loading*, launching or other cause.

B 1. A vessel six years of age and *under*, deficient in any of the above particulars that would rank her in Class A; or if over six years of age, and not *over* eight years of age, sound in timbers, rigging in good condition and complete, shall be ranked in B 1.

B 2. Vessels however *new*, unsafe and bad in model, and vessels *under* eight years of age, getting tender in timber or rigging, or shortened or pinched, in ropes, chains, pumps or finding, and not well kept up, shall be ranked as B 2.

Vessels thoroughly cut down and rebuilt within four years next preceding the classification, if over eight years of age, and otherwise well found as in B 1, may rank in that class, or in B 2, if having the deficiencies mentioned in that class.

No vessel over eight years of age, unless thoroughly *rebuilt*, shall rank in Class B 1. If such vessel be only overhauled or repaired thoroughly, within two years of classification, she shall rank not higher than B 2.

C 1. Vessels *over* eight years of age and under twelve years, ground tackle heavy and well rigged, and found as in Class B 1, and well kept up, esteemed good for lumber, wood, &c., shall rank as C 1.

C 2. Vessels of above age, wanting as specified in B 2, shall be ranked C 2, and be deemed unseaworthy, and so of all vessels of greater age.

A vessel of over eight years of age, thoroughly well salted and preserved, or extraordinarily well built, if two inspectors concur, or one inspector and the Secretary, may be ranked in Class B; and so if two inspectors, or one and the Secretary concur, may vary these general rules on *particular* vessels, but the reason therefor shall be placed on the register.

Steamers and propellers to rank by same rules as vessels—*if ground tackle be light, or if deficient in power*, the grade shall be reduced.

If wanting thorough security and protection against fire from boilers or chimney, to be reduced a full class.

Passenger steamers, if otherwise entitled, may hold Class A till five years old.

HULL RATES FOR SAIL VESSELS.

For the season.	A 1.	A 2.	B 1.	B 2.	C 1.	C 2.
Less than 200 tons	6 pr. ct.	6½ pr. ct.	7 pr. ct.	8½ pr. ct.	10 pr. ct.	11 pr ct.
From 200 to 300 "	7 "	7½ "	8 "	9 "	11 "	12 "
From 300 to 400 "	8 "	8½ "	9 "	10 "	12 "	15 "
Upwards of 400 "	8½ "	9 "	10 "	12 "	15 "	20 "

For the year add ½ per cent. to above rates.

RATES FOR STEAM VESSELS.

For the season.	A.	B.	C.
Less than 400 tons	8 pr. ct.	9 pr. ct.	15 pr. ct.
Over 400 and less than 600 tons	9 "	10 "	17 "
Over 600 tons	10 "	11 "	20 "

For the year add 1 per cent. to above rates.

For passenger and Mail Steamers and first class Propellers, navigating Lake Ontario only to Ogdensburgh, deduct 10 per cent. for above rates.

RATES OF PARTICULAR AVERAGE.

For Class A.

Vessels valued under $5,000, rate of average..........8 per cent.
" " $5,000 to $8,000 " " ....6 "
" " $8,000 and over " " ....5 "

For Class B.

Vessels valued under $5,000, rate of average..........10 per cent.
" " $5,000 to $8,000.......... 8 "
" " $8,000 and upwards.......... 6 "

For Class C.

Vessels valued under $5,000, rate of average..........25 per cent.
" " $5,000 to $8,000..........20 "
" " over $8,000..........15 "

Vessels in the trade on the east shore and ports of Lake Michigan and east shore of Lake Huron to pay 2 per cent. additional.

Lumber vessels loading off the west shore of Lake Michigan (Green Bay excepted,) and west shore of Lake Huron, to pay *one* per cent. additional

SHORT RATES TO NOVEMBER 30TH.

April having expired, deduct from above rates 10 per cent.
May " " " " " 20 "
June " " " " " 25 "
July " " " " " 30 "
August " " " " " 35 "
September " " " " 45 "
October " " " " 55 "

If the month in which application is made be partially expired, no deduction shall be made therefor.

Season from April 1st, noon, to Nov. 30th, noon, on Lake Michigan, Huron, St. Clair, Erie, Ontario and River St. Lawrence to Montreal.

EXTENSIONS.

Sail and steam vessels loaded and ready to sail from ports on one lake to ports on another lake on or before the 20th November, at 6 o'clock, P.M., may have five days extension; and if from one port to another port on the

same lake, if loaded and ready to sail before November 25th, at 6 o'clock, P. M., may have an extension of five days.

Two per cent. shall be paid for extension.

Hull risks on Lake Superior to terminate November 20th, but may be extended to November 25th, for 2 per cent. additional.

Fire Insurance for the winter on yearly Hull Policies, covers the equipments on board the vessel only—if removed, an additional premium to be charged thereon.

CARGO TARIFF, FOR STEAM AND SAIL VESSELS CLASSED *A* 2.

For A 1, *deduct* 5 *per cent.; for B* 1, *add* 10 *per cent.; for B* 2, *add* 20 *per cent.; for C* 1, *add* 30 *per cent. to this Tariff.*

For Sail Vessels, Steamers and Propellers.	*Apr.*	*May* 1 *to Au.* 31.	*September.*		*October.*		*November.*	
			1 *to* 14	15 *to* 30	1 *to* 14	15 *to* 3	1 *to* 14	15 *to* 30
From Ports on Lake Michigan to Ports on Lake Erie, and vice versa:								
Add ¼ per cent. from East side.								
Grain, Coal, and Salt...........	2	1¼	1½	1¾	2	2¼	2¾	3½
Rolling Freight and Lumber.....	1½	⅞	⅛	1¼	1½	1¾	2¼	2¾
From Ports West of Cleveland on Lake Erie, to Buffalo or Tonawanda, and vice versa:								
Grain, Coal and Salt...........	⅞	⅝	⅞	1	1¼	1½	1¾	2
Rolling Freight and Lumber.....	⅝	½	⅝	¾	⅞	1	1¼	1½
From Cleveland to Buffalo or Tonawanda, and vice versa:								
Grain, Coal, and Salt...........	¾	½	¾	⅞	1	1¼	1⅜	1⅝
Rolling Freight and Lumber....	½	⅜	½	⅝	¾	⅞	1	1⅛

From Canadian Ports on Lake Erie to Buffalo or any American Port on Lake Erie, and vice versa.

From Ports East of Long Point, same rates as from Cleveland to Buffalo, and vice versa.

From Ports West of Long Point, same as from Toledo to Buffalo, and vice versa.

If loaded off shore add ¼ per cent.

TO PORTS ON LAKE ONTARIO.

From the ports of other Lakes, add to the rates to Buffalo, as follows:

To ports not below Kingston, for April, add.............................. ¾ per cent.
From May 1st to September 15th, add.............................. ½ "
" September 15th to October 31st, add.............................. ¾ "
" November 1st to November 30th, add.............................. 1 "
Add *further* to Ogdensburgh.............................. ⅜ "
or ½ per cent. if to Montreal by Canals.

FROM LAKE MICHIGAN VIA. COLLINGWOOD ROUTE.

To Kingston, and vice versa, same as rates between Lake Michigan and Buffalo.

Same addition as above (⅛ and ½ per cent,) to Ogdensburgh or Montreal. If to Toronto only, deduct ½ per cent.

LAKE SUPERIOR CARGO RATES.

Same as the rates from Lake Michigan to Lake Erie, if not beyond La Pointe.

Add ¼ per cent. from La Pointe to Superior. If to the north of Isle Royal, add 1 per cent.

Iron and Copper Ores to rank in bulk or barrels at the same rates as Grain.

If to or from Detroit only, deduct ½ per cent.

From Lake ports to New-York, for grain, add	½	"
" Rolling freight, add	¼	"

CARGO AVERAGES.

Particular average on grain	10	per cent.
" " " salt	20	"

CARGO RATES FOR SAIL AND STEAM VESSELS.

Classed other than A 2, to wit:

For A 1, deduct 5 per cent. from above rates.
" B 1, add 10 " to " "
" B 2, " 20 " to " "
" C 1, " 30 " to " "
" C 2, not seaworthy.

OPEN POLICY ENDORSEMENTS, ETC.

Where name of vessel and grade is unknown, either for want of classification or otherwise, the rate shall be the same as on a vessel classed B 1. If the grade prove better than B 1, the difference may be refunded.

Merchandize bought, shipped and insured, at tide water, or east of Lake Ports, *is not* subject to the *above* variations of rates, on account of class of vessels, but if bought, shipped and insured, at any port on the Lakes, their tributaries, or the River St. Lawrence, as low and including Montreal, the above variation of rates, &c., to apply.

VARIATIONS RELATING TO ALL OF THE FOREGOING RATES.

RAILROAD IRON, Pig Iron, Marble, Stone and Ores, same rates as Grain in same vessels.

DECK RATES.—That the rates of premium on cargoes shipped upon decks of sailing vessels be, for the months of April, September, October and November, three times the under deck rates, and for the months of May, June, July and August, double the amount of under deck rates. Deck cargoes on sailing vessels insured against total loss of packages only; the minimum rate of loss to make a claim shall be 10 per cent., except salt,

which shall be 20 per cent. of the whole value insured on deck. And in all cases on deck risks, to be free from damage by wet, breakage, leakage, or exposure.

CARGO TARIFF ON MERCHANDIZE GOING WEST—SHIPPED AND INSURED AT TIDE WATER, OR EAST OF LAKE PORTS.

(*Same as adopted by New York Board of Underwriters*).

RATES FOR STEAM AND SAIL VESSELS.

Fourteen days from NEW-YORK to be allowed to reach the shipping place on the Lake, excepting via Erie Railroad to Dunkirk, and via Erie Railroad to Buffalo, when three days only are to be allowed.

	STEAM-BOATS, PROPELLERS AND SAILING VESSELS. ON RISKS LEAVING THE SHIPPING PLACES ON THE LAKES IN						
	March.	April.	May, Je., J'ly.	August, Sept.	Oct.	Pri. to Nov. 15.	Fr. 15 to 30 Nov.
LAKE ERIE.							
From Buffalo or Dunkirk to places on the South side of Lake Erie not west of Cleveland, and on the Canada side not west of Port Stanley	1	½	⅜	⅝	1	1	1½
From Buffalo or Dunkirk to places on the South side of Lake Erie, west of Cleveland and not west of Detroit, and to places on the Canada side not west of Windsor	1	⅝	¾	¾	1	1	1½
LAKE HURON.							
From Buffalo or Dunkirk to places beyond Detroit, and to places not beyond the Island of Mackinaw, on the United States side, and on the Canada side north of Windsor, and not beyond Cape Hurd	1½	1	¾	1	1½	1¾	2¼
From Buffalo or Dunkirk to Places on the Canada side of Lake Huron, North of Cape Hurd, and to places between Mackinaw and Sault St. Marie, including Sault St. Marie	2	1¼	1	1¼	2	2	2½
LAKE MICHIGAN.							
From Buffalo or Dunkirk, to places beyond the Island of Mackinaw, and to places not beyond the Southern end of Green Bay	2	1¼	1	1¼	2	2	2½
From Buffalo or Dunkirk to Milwaukie, Chicago and other places on the West side of Lake Michigan, including Grand Haven and St. Joseph's on the east side	2	1½	1¼	1½	2	3	3½
From Buffalo or Dunkirk to Michigan City, and other places on the east side of Lake Michigan, excepting Grand Haven and St. Joseph's	2½	1¾	1½	1¾	2½	3½	4
LAKE SUPERIOR.							
From Buffalo or Dunkirk to places beyond Sault St. Marie, and to places on the south side of Lake Superior not beyond Ontonagon River	3	2¼	1¾	2¼	3	3½	4
From Buffalo or Dunkirk to places on the north side of Lake Superior, and beyond the Ontonagon River on the south side	3	2½	2	2½	3	3¾	4¼
From Cleveland to places on the south side of Lake Superior, not beyond the Ontonagon River	2	1¾	1¼	1¾	2	2¼	2¼
From places west of Cleveland, and not west of Detroit, to places on the south side of Lake Superior not beyond the Ontonagon River	2	1½	1¼	1½	2	2¼	2¼
From Sault St. Marie to places on the south side of Lake Superior not beyond the Ontonagon River	1¾	1½	1	1½	1¾	2	2
From places on Lake Michigan beyond the southern end of Green Bay to places on the south side of Lake Superior not beyond the Ontonagon River	2¼	2¼	1½	2¼	2¼	3	3
LAKE ONTARIO.—CONTINUOUS.							
Risks connected with Lake Erie or the Upper Lakes, which pass through the Welland Canal and Lake Ontario, (with or without stopping at Buffalo,) an additional premium of ¼ per cent. to be added to the above table of rates during the whole season.							
From one place on Lake Ontario to another on same Lake, including places on the Welland Canal, between Lake Ontario and Lake Erie	1	⅜	⅜	¾	1	1¼	1¾
From New-York and Boston to Montreal, and vice versa, (via Lake Champlain and railroad and canals.)	¾	⅜	½	½	¾	¾	1¼
Do. Quebec, do. do.	1	¾	¾	¾	1	1	1½
Do. Ogdensburgh, do. do.	½	⅜	⅜	⅜	½	½	1

The preceding rates to be calculated from the day of leaving the shipping ports on the Lakes. Goods going from New-York, fourteen days to be allowed to reach the shipping place on the Lakes, excepting by railroad to Dunkirk or Buffalo, when three days only are to be allowed.

Goods on deck, by sailing vessels on the Lakes, not to be covered by the policy, unless double rates in the months of May, June, July and August is paid thereon, and in March, April, September, October and November, treble rates; and in all cases, on deck risks, to be free from damage by wet, breakage, leakage or exposure.

Risks back from the Lakes and Rivers, going by railroads, wagons, canals, or re-shipped by boats on the rivers, to be charged not less than ¼ per cent. additional to the rate for the usual lake or river landing place.

From New-York to Buffalo, Oswego, Cape Vincent, and vice versa, connected with the lake risks, ¼ per cent. additional premium to the preceding Table of Rates. If not connected with Lake risks, ½ per cent.

From New-York to Dunkirk, or vice versa, if not connected with the lake risk, ¼ per cent., via the Erie Railroad; but when connected with a ake risk ⅛ per cent. in addition to the preceding Table of Rates.

Risks of Lighterage for not more than two miles from the vessel may be taken free oı charge. If over two miles, ¼ per cent. extra premium to be charged.

STATEN ISLAND FERRY INVESTIGATION.

REPORT OF FERRY COMMITTEE.

The sinking of the Staten Island ferry-boat Columbus, when within a few hundred feet of her slip, at the Battery, having been cut through by the ice, has given rise to an investigation by proper persons appointed by an Investigating Committee, to inspect the remaining ferry boats plying between Staten Island and this city. The persons appointed were:—Mr. James W. Low (Surveyor of the Mutual Insurance Company), and Mr. Charles H. Haswell (Engineer to Board of Underwriters.)

The following are their reports, respectively, first of the hulls, then of the engines and life-saving appliances:

REPORT OF THE SURVEYOR.

New-York, *February* 5, 1856.

N. D. Ellingwood, Esq., Chairman of the Committee for Investigating the Staten Island Ferry Boats:

Sir:—By the request of T. B. Satterthwaite, Esq., I called on board the Staten Island ferry boats, to examine their condition, also their capability of performing the services for which they are required.

I was received very politely by the officers of the Company, and shown through the boats. I examined four of them, and report as follows, viz.:—

Sylph—I found to be about twelve years old, fair built, and good materials, shows considerable hard service, has had frequent repairs, and is now in fair order and good running condition for a summer boat; but her construction is not suitable for the winter season and exposure to ice in our rivers. Her frame is very light, and lightly fastened, timbers far apart and small at the tops, and particularly around the bows, where she has to receive the greatest resistance from the ice. She was constructed, I presume, for speed more than strength; therefore made as light as possible.

Hunchback—Built in 1852, is the best boat; fair built and materials good, as far as can be seen; is in good order, and is a good summer boat; has a light frame, and rather light deck frame for so much top weight; her construction is not suitable for a winter boat on the ice; there are not timbers enough (too far apart) to receive the great pressure of the ice in the tide's

way, the ends are not filled in solid, as all boats should be built intended for ferry purposes.

Huguenot—is getting old. I believe she was built in 1843; was lengthened about two years since, and had a good overhaul; found to be sound. She is in fair running order as regards her hull; but the difficulty of old boats is, that they get iron sick, and it is hard to tell where it is. She has been built similar to the others, with a light frame, timbers far apart, and deficient in strength for a ferry-boat in the winter season. She would do very well a few years longer for the summer season; but I do not consider all boats should be filled in solid at the ends, for winter or summer, for they frequently come in contact with foggy weather, and in case of accident at any time, many lives would be exposed to danger, if only at a short distance from the shore.

Staten Islander—I found to be an old boat—sixteen years old, but she may be called a good boat for her age; is in fair running order. She is differently constructed from the other boats, by being braced between the frames along her amidships sections. In view of this, her sides would bear more pressure than the other boats. Still, her bows are no better, not being filled in solid; frame timbers far apart. I should judge, also, that some of her iron fastenings must be bad. They are now putting in a new wheel, and also some plank on the bows, to protect them from the ice. That is well, as far as it goes. At any rate, I do not think her fit for winter service, particularly in the ice.

In this report of the above boats, I wish you to take into consideration that the opportunity to examine is not what I would wish; for many parts below I cannot see on account of water-tanks, cabin and bulkheads, &c.; nor can I say if they are sound, unless the planking or ceiling be removed. Mr. J. Thompson, the superintendent of the ferry, says, that he has found them sound when he has had them under repairs. But in the construction of the boats I cannot well be deceived. I could see enough to satisfy me that they were built more for speed than strength.

I wish to say a few words as regards my experience in ferry-boat building, as well as many other kinds of shipbuilding.

I have superintended the Union ferry boats—three for the Union Company, Brooklyn, and six for the Williamsburg Company—besides three steamships, many sailing ships, brigs, and schooners—in all, about thirty vessels.

In the construction of ferry boats for our rivers, I have always looked more to the strength than the speed; therefore the model must be considered, to give them good bearings, and sufficient stability to stand upright in running, and bear any load that may be put on their decks. To support the weight on them, they must have a frame of sufficient strength, and well secured throughout. I have generally put in double frames, twenty inches from centre to centre, of oak and chestnut; deck beams of pine, six inches square and twenty-four inches from centre to centre, and heavy wheel beams of pine; and the ends of the boats are all oak, and very securely put together, being able to stand any resistance that they may at any time meet with, without injury to the boat. Also, the bows must be filled in solid, between the frames, thirty feet from the ends, with pine timber, and the joints must be well made. In case the planks are cut through with ice or any other hard substance, she would not fill with water for a long time.

JAMES W. LOW.

REPORT OF ENGINEER.

SIR:—In compliance with your request to inspect the steamboats of the Staten Island Ferry, with a view to report to you the condition of their machinery, and security and provisions against fire, &c., I have to report:

That I have inspected the only boats now running—viz., the Huguenot and Hunchback; but, from previous examination of the remaining boats of this Company—viz., the Josephine, Sylph, and Staten Islander, and from information of a reliable character at this time, I am safe to include them in the following details and suggestions:—

Engines and Boilers.

The engines and boilers of these boats, so far as a visual examination affords an opportunity for observation, are fully equal to the requirements of the route.

Security and Provisions against Fire.

The security against fire, proceeding from the boilers, is unusually good for boats of this class, as blowers to the furnaces are not used, and the boilers are well covered with felt, and the spaces around them are sufficiently free for the passage of air and for observation by the firemen on watch. The provisions against fire, however, are inadequate to the requirements of travel by water; there being a deficiency of suitable pumps, hose-buckets, and axes designed and allotted for this especial purpose.

Collisions.

The boats are unprovided with independent steam bilge-pumps, and their boilers are not very securely fastened in their beds. In the event, therefore, of a collision of one of them with another, or with a vessel, or their experiencing any of the concussions inseparable from running in fogs and an obscure atmosphere, &c., they would be much exposed to sinking from insufficient means to free them of water; and if their boilers were to be started, they would, by the rupture of the steam-pipe, be deprived of the steam necessary to free them by their bilge injections, and to work them into shoal water.

Life-Saving Instruments.

The boats of this Company, like to most ferry boats, are very deficient in the means of saving the lives of passengers, in the event of their sinking. The proprietors seem to have lost sight of the circumstance, that a similarity with other Ferry Companies running boats only across narrow rivers, in their freedom from the operation of the late steamboat law, does not exempt them from the responsibility of an attention to the safety of their passengers, commensurate with the increased risk due to their exposed route. I am well aware, however, that it would be imposing a very onerous burthen on this Company to furnish and carry, at all times, adequate means to save the lives of all their passengers, in the event of the sinking of any of their boats;

neither is such a duty, on their part, in my opinion, necessary, for the reasons that, if their boats are provided with the pumps before referred to, and an equipment of boats, &c., even to the extent of convenient stowages of them, the public may repose a reliable confidence in the safety of their route.

The late law of Congress, regarding the transportation of passengers in steam-vessels, does not apply to ferry boats. This Company, therefore, in any of the points I have referred to, have not violated any statute; neither are the equipments and provisions of these boats inferior to other boats employed in a like service.

As the elements here presented are, in my opinion, conclusive, as to these boats being insufficiently fitted for the route, I beg leave to submit the following suggestions, and which I am gratified in being able to state have met the approbation with an expression and willingness of adoption, on the part of the Ferry Company, by Messrs. Staples and Thompson.

1st. These boats should be fitted with independent steam, fire, and bilge-pumps.

2d. Their boilers should be better secured from the effect of a collision, or keeling of the boats.

3d. That they should be more liberally supplied with hose, water-buckets, and axes.

I am, respectfully, yours, &c.,.

CHAS. H. HASWELL.

THE BABBETT METAL.

IT is known to engineers, both in the United States and England, who have paid for the right to use the Babbett metal, that it has been a great benefit in reducing the journal friction of machinery. They will be surprised to learn now that the first patent having run out, granted in 1839, for 14 years, and a second being granted in 1853, for 7 years, that Mr. Babbett is not the inventor, and the letters patent have been granted to the wrong party as one of the affidavits for which we give place will show:

STATE OF MASSACHUSETTS, } *ss.*
Hampshire County. }

Laommi Hall, of Norwich, in said County of Hampshire, being duly sworn, doth depose and say, that he knows Isaac W. Ayres, and has known him since the year 1832, and worked with him and under his direction as an Engineer and Machinist, at the New-York Dying and Printing Establishment on Staten Island, from the spring of 1833, until said Ayres left said establishment, which was in the fall of the year 1840.

Deponent further says, that said Ayres had a general charge of all the machinery in said establishment, where at times they had between 200 and 300 hands employed. Their machinery consisted of steam engines and boilers, glazing cylinders, embossing machines, printing machines, &c.

Deponent further says, that in the year 1833 the business of said establishment was on the increase. The machinery having been originally constructed and provided for a much smaller business, it was too light and weak for the amount of work it was required to do. One of the principal difficulties occurred in the boxes of the cylinders upon which the journals or bearings of the rolls run. The large rolls came in contact with the glazing cylinder which was by artificial means kept to a heat of about 300 degrees, which, with the weight of the machine and the pressure of the screw communicated the heat to the bearings to such a degree, that the oil or grease constantly burned off, thereby bringing the metals into immediate contact, destroying both boxes and journals. After trying, without satisfactory results, black-lead, sulphur, and other expedients, the said Ayres applied a remedy that finally proved completely successful, namely, that of putting in the box or bearing a metal softer than the box or the journal. This was first done by drilling the inner surface of the large bearing, which was for journals of six or seven inches in diameter by about eight inches in length, full of holes, each one-half or five-eighths of an inch in diameter and half an inch deep, and then filling them up with a soft metal, composed of tin, lead, and antimony. These boxes worked so well, that Colonel Nathan Barrett, who was the general suprintendent of the said establishment, and the said Ayres, had the whole surface of the bearing cut out or sunk down, except an edge or rim around the semi-diameter and the longitudinal edge to keep the metal from crushing out the space filled with the soft metal, made adhesive in its place by solder.

A number of those boxes deponent himself cut out under the direction of the said Barrett and Ayres. Deponent says, that according to the best of his recollection, this was done in the year 1834, but he is sure it was done as early as the year 1835.

Deponent further says, that the bearings thus arranged, worked so well and saved so much trouble and expense, that the invention was adopted in the other machinery, both old and new, about the works. And the said Ayres being a practical pattern-maker, made all the patterns for all the new boxes required with aforesaid edges or rims in them, and had the castings made accordingly, to save the labor and expense of cutting them out. Some of the new boxes, thus made, were of cast-iron, and some of composition or brass. This invention continued to be used by said Ayres and Barrett thenceforward in the said establishment so long as deponent remained in it, which was until the spring of 1842.

LAOMMI HALL.

Norwich, Mass., Decr. 13*th*, 1854.

Hampshire, ss., December 13*th*, 1854.

Personally appeared Laommi Hall, and made oath to the truth of the annexed deposition by him subscribed, before me,

WASHINGTON STEVENS,

Justice of the Peace.

EARTHQUAKE IN JAPAN

The following account of this calamity is from notes taken by a Russian officer, descriptive of the effects felt at Simoda, when the Russian frigate *Diana* was wrecked and lost.

"On the 23d of December, 1854, the men on board the Russian frigate *Diana*, being desirous of lifting a small anchor on the bow, and at 9.30, another anchor was laid out on the quarter. At 9.45 she was observed to shake very much for about a minute. At first they imagined her to be aground, but, on sounding, eight fathoms of water were found around her. The day was beautifully fine and clear, the sky without a cloud, and the water perfectly calm. Nothing more was thought of the matter, and the duties of the ship were proceeded with. At 10, A. M., a large wave was noticed rolling into the bay, and the water on the beach very rapidly rising, immersed the village of Simoda. It appeared to those on board the frigate as if the village was sinking. A large Japanese junk was driven on shore with violence, but the frigate held to her anchors. The cutter and captain's gig, which had been undergoing repairs on shore, were seen drifting out to sea, and a boat was sent to pick them up; but about five minutes afterwards the water, now very muddy, was observed rushing out of the bay. The guns were now secured, lower-deck ports closed, and hatches battened down, the boats recalled, and a large boat (pinnace or barge, probably,) was obliged to throw everything overboard and make the best of her way to the frigate. The boats had barely time to fetch the ship when a second wave rolled into the bay; this carried on shore all the boats that were afloat, and on its receding, all the houses that had formed the village of Simoda were washed into the bay, covering the water with ruins of houses and wrecks of junks. The frigate now dragged her anchor, and a short while afterwards a large junk came with great violence against her starboard bow, carrying away flying jib-boom, jib-boom, martingale, and swinging-boom, and injuring the bow. Three men from the junk managed to scramble on board the frigate, but the other five refused to go, and in two minutes all went down alongside, the ship at the same time swinging most violently. She continued this motion for about half an hour, and during this time must have made from sixty to seventy revolutions, dragging her anchors all the time, and gradually approaching one of the islands.

The ship was now at the mercy of the waves. All command of her was lost; and at one time she fell on her beam-ends, so that it was impossible to stand on deck; but from the gyration she made, no shock was felt. This lasted for five minutes, when the water rose and she slipped off, tearing away rudder, half of stern post, false keel, and a piece of keel eighty-one feet long, besides two planks, and before she righted she described the same circle several times. One of the midship guns broke adrift and jumped across the two guns on the opposite side, killing one man and injuring four others. At twelve o'clock the current was less violent, and shores were got out and placed against the ship's side. At 12.30 the water again rushed into the bay with the same impetuosity, swinging the ship to and fro as before. This continued until 2.30, during which time she was on her beam-ends five times, but not so much as before; the shores were carried away. The water rose and fell very rapidly; in five minutes it would decrease from twenty-

three feet to three feet, and at one time it was so low that all the anchors were visible above water; at 3 everything was still, and the ship was in 22 feet of water, making twenty-two inches every hour, until finally she went down. Around, nothing could be seen but wrecks of junks and fragments of houses, from the roof of one of the latter an old person was taken, quite insensible."

TRIAL OF THE BRITISH SCREW STEAM-SHIP "PERA."

This screw steamship, built for the Peninsular and Oriental Company, from designs by James Ash, has made her trial trip, of which the following is the account. Under canvas, being a medium rigged ship, with the wind blowing strong from the south-west, and after the top-gallant sails had been clewed up, the average of four runs showed a speed of 12½ knots, or equal to 14⅗ geographical miles per hour. The result proved highly satisfactory to all who were interested. The "*Pera*" is of considerably less tonnage than the famed *Himalaya*, which the Company have sold to the government for a transport ship. The dimensions of the *Pera*, are:—Length for tonnage (at the height of middle deck) 303 ft. 7 in; ditto over all, 334 ft.; bread h, 42 ft. 3 in; depth of hold, 27 ft. 2 in; height between decks in the clear, 7 ft; full tonnage, 2,630. As the breadth for tonnage in England is now taken inside, as well as the length, we cannot decide whether the published account means internal or external breadth. The Pera is very sharp for a British steamer, and is furnished with a moderate amount of power, only it being intended to test the economy of the new principle of *less power and fine lines.* Her first voyage to India is looked forward to with interest, and sanguine hopes are entertained of the satisfactory elucidation of this problem. She is fitted with Cunningham's patent reefing top-sails, 700 vessels having already adopted this improvement.

The engines, built by Rennie & Co., rate 450 horse-power, and are designed upon the vertical trunk principle. Lamb and Sumner's patent flue boilers have been adopted; the shaft is geared two to one, by means of a multiplying wheel. The engines during the trial, averaged 33 revolutions or 66 turns of the screw per minute.

This vessel has been pronounced the most perfect steamship that ever left the Thames. We should like to see her lines to compare them with our own vessels—especially with the lines of the *new war steamers.* We invite attention to the favorable ratio of depth to breadth adopted in the *Pera.* The nautical world will go further in this direction yet, and discover that it has been a waste of buoyancy and strength to whittle the devoted "water-lines," to such an extreme attenuation as has sometimes been done. Builders will yet cease to fear the adoption of liberal breadths, when it is well understood how to get a *sharp* model, and still retain it.

DISASTERS AT SEA.

STEAMERS.

Georgina, Patalum for San Francisco, boiler exploded and killed 10 persons, Nov. 24.
Forest City, Portland for Boston, off Cape Elizabeth, broke cylinder head, Jan. 8.
Fernando Catolica, was lost off Cienfuegos, Jan. 2.
American Banner, (tug) Philadelphia for Norfolk, disabled Jan. 1, was towed in.
Unknown, was seen Jan. 5th, lat. 30 10, lon. 78 50, is a total loss.
Wm. Jenkins, went ashore on Seven Foot Knoll, Jan. 31.
Western Port, (prop.) Portland for New-York, cut down by ice, sunk between Hart and City Island.

SHIPS.

Adriatic, Boston for Buenos Ayres, got ashore on English Bank, River Plate, Nov. 3.
Pepperill, at Portland from Shields, sprung a leak, Nov. 15.
Isaac Allerton, Liverpool for New-York, put into Bermuda, Dec. 20.
Regulus, Kennebunk for New-York, came in contact with barque Vonstien, Dec. 24th, lost bulwarks, &c.
Telegraph, New-York for Australia, put into Savannah leaky, Dec. 20.
Creole, New-Orleans for Havre, in contact with ship Malabar, Dec 15th, put into Key West.
Malabar, New-Orleans for Glasgow, came in contact with ship Creole, Dec. 15th, great damage.
Andrew Jackson, New-York for San Francisco, lost fore yard, &c.
Flying Dragon, New-York for San Francisco, much damaged.
Sirroco, Philadelphia for San Francisco, lost sails, &c.
Ashburton, New-Orleans for Liverpool, grounded on American Shoals, Fla., prior to Dec. 25.
Unknown, with mainmast standing, was seen in lat. 45, lon. 48, burning and abandoned.
Statesman, Plymouth for New-Orleans, lost fore-topmast, &c , Dec. 3.
Lalla Rookh, Liverpool for Calcutta, leaky,
John Spencer, Ningpo for Hong Kong, leaky.
Stephen Lurman, Rio Janeiro for New-Orleans, put into former port leaky, Nov. 13.
Spirit of the Times, New-York for San Francisco, lost sails, stove bulwarks, &c.
Java, San Juan del Sud for Philadelphia. totally lost near Anogado, Nov. 30.
Unknown, was seen Nov. 25th, at lat. 50 N. lon. 30 W., water-logged and abandoned.
Heber, New-Orleans for Liverpool, abandoned in a sinking condition.
Sapphire, Liverpool for New-Orleans, struck by lightning Dec. 22d, much damaged.
Unknown, was seen, Dec. 8, abandoned and dismasted.
Golden Gate, Marseilles for New-York, sprung a leak and lost sails.
John M. Wood, Calcutta for London, lost spars, &c.
Coromandal, Bordeaux for California, put into Rio Janeiro in distress, Dec. 7th.
Golden West, New-York for San Francisco, put into Valparaiso, Oct. 17th, much damaged.
Albatross, London for Calcutta, leaking while going up the river.
Unkown, off Highland Light, Cape Cod, with masts gone.
Africaine, San Francisco for Callao, put into Papete, previous to Oct. 21st, leaky.
Western Continent, at Calcutta, lost masts, Jan 1.
Irene, Liverpool for Boston, went ashore on Point Shirley Beach, lost masts.
Acadian, (Br.) Glasgow for New-York, put into Queenstown in distress.
Shelter, New-Orleans for Liverpool, arrived at latter port leaky, and in distress.
Golden Light, New-York for Liverpool, leaking badly.
Unknown, went ashore at Horne Island, Jan. 2.
Ocean Home, New-Orleans for Rotterdam, grounded on the Vlakte, Dec. 18.
George Groundwater, Alexandria for Jersey, put into Torbay, in distress.
Victoria, Liverpool for Baltimore, put into Belfast, very leaky, Dec. 21.
S. Gildersleeve, New-Orleans at Havre, ran against her dock, Dec. 14, leaks badly.
Champlain, New-York for Queenstown, put into Liverpool, Jan. 12, leaky.
St. Andrew, Stockholm for New-York, put into Lisbon, Dec. 13th, leaky.
Emigrant, New-York for Bremen, in collision with unknown ship, Dec. 18th, much damaged.
Emily, Mauritius for London, put into Queenstown, Dec. 22d, leaking
Stringay, Canton for New-York, went ashore on Fire Island, and is broken up.
Jamestown, New-York for San Francisco, lost spars, &c.
Siddons, London for New-Orleans, got ashore on Carysfort Reef, Jan. 3.
Siam, (Br.) Liverpool for Savannah, while off Tybee, struck upon a shoal, Dec. 26, total loss.
Jane D. Cooper, Leghorn for Boston, lost sails, &c.
Erie, Leghorn for New-York, lost a few sails, Dec. 21

A. Chesebrough, Hong Kong for San Francisco, run into by ship Invincible and sank.
Aurora, New-York for San Francisco, put back leaky, Jan. 2.
Kate Hunter, Liverpool for Philadelphia, lost sails and spars.
Wm. Hitchcock, Savannah for Havre, was burnt at sea.
Valparaiso, New-Orleans for Liverpool, was wrecked on the Riding Rocks, near Nassau.
Nord Amerika, (Ham.) New-York for Hamburg, lost rudder, Dec. 19.
Luconia, Liverpool for Charleston, put into Cork leaky, Jan. 10.
Wm. Wirt, Liverpool for New-Orleans, put back, Jan. 14.
Jeremiah Thompson, New-York for Liverpool, lost sails, spars, bulwarks, &c., Dec. 30.
Unknown, is ashore near Key West, is a total loss.
Unknown, (Fr.) is ashore and capsized at Great Swarp, only one man saved.
Whirlwind, at New-York, much damaged.
Mary Hale, New-Orleans for Trieste, was totally lost on Dog Rocks, Salt Key Bank, Jan. 8.
Unknown, was seen off Block Island, Jan. 20th, under jury-masts.
Unknown, was seen with masts gone, &c., Jan. 16th, in lat. 34 30, lon. 75 30.
John Knox, (Br.) Liverpool for Mobile, went ashore, Jan. 13th, on Chandelier Island.
Yorkshire, Liverpool for New-York, went ashore on Governor's Island, Feb. 4.
Ellen Austin, New-York for Liverpool, put back, Jan. 19th, with loss of sails, &c.
Thomas W. Sears, Singapore for New-York, put into St. Thomas, Jan. 2d, lost main-mast.
Carrier Dove, New-York for Rio Janeiro, lost sails, masts, &c., Oct. 13.
Sarah Parker, New-York, for San Francisco, put into Rio Janeiro, in distress.
Faneuil Hall, was wrecked on Abraholhos Bank, Bl.
Greenwich, Callao for Hampton Roads, was wrecked in Booby Rock Channel, Jan. 31.
Cheshire, Callao for Valencia, was driven ashore near Tarifa Light, Jan. 7th, crew saved.
Emily A. Hall, Portland for Charleston, put into Nassau in distress, Feb. 1.
Elizabeth Hamilton, New-York for Havre, put into Bermuda in distress, Jan. 31.
Eliza Mallory, New-Orleans for Genoa, put into Key West, Jan. 30.
Columbia, New-Orleans for Cork, went ashore on Pickle Reef, Jan. 31st, is leaking.
Gentoo, Tongoy for Baltimore, lost main and mizzen-masts, sails, fore-top-mast, &c., Jan. 5.
Lady Arabella, Key West for Bordeaux, put into Nassau, Jan. 29th, leaking badly.
Josephine, Queenstown for Philadelphia, lost sails, spars, &c.

BARQUES.

Tonquin, Bristol, E. for N. Y. sprung a leak and lost sails, &c.
Vonstein, (Brem.) Bremen for New-York, run into by ship Regulus, Dec. 24th, great damage.
Ewretta, Black River, Jam. for New-York, abandoned very leaky.
Lucy, New-Orleans for Boston, returned to former port leaky, Dec. 18.
Racehorse, Boston for Smyrna, lost some sails, Dec. 19.
Ottawa, Havana for New-York, grounded on Romer Shoals.
Metropolis, Columbia River for Hong Kong, put into San Francisco, Dec. 10th, lost bulwarks, sails, &c.
Sir Charles Napier, St. Jago de Cuba for Swansea, went ashore at Wadling's Island, Dec. 15.
Louisa, Cardenas for New-York, much damaged, Dec. 26.
Unknown, was seen Dec. 11th, water-logged.
Elida, (Ham.) at New-York, lost sails, &c.
John Bird, Malaga for New-York, lost deck-load, sails, &c., Dec. 2.
Greetham, Lisbon for Rio Janeiro, lost masts, Dec. 22.
Gov. Von Oxholm, St Croix for Turks Island, went ashore on the Isle of Bonaire, Dec. 2.
Sarah, Boston for Philadelphia, lost mainmast.
N. P. Talmadge, New-York for New-Orleans, put into Charleston in distress, prior to Dec. 13th very leaky.
John Strud, New-Orleans for New-York, went ashore near Pavillion Rock, is a total loss.
Tivola, Neuvitas for New-York, went ashore near Key West, lost deck load, &c.
Venezuela, Porto Bello for Philadelphia, went ashore near Currituck, is a total loss.
Spirit of the Sea, Palermo for Baltimore, went ashore on Currituck.
Duque de Braganza de Lexas, got ashore on Long Beach, N. J., Jan. 5th, and went to pieces.
Occident, Buenos Ayres for Portland, went ashore on Parker's Island.
Maraval, New-York at Bermuda, lost spars, &c., Dec. 20.
J. Farnum, Havana for New-York, went ashore near the Squam, N. J.
Almira, Havana for Portland, lost sails and deck load, Dec. 23.
Jenny Ford, New-Castle, N. S. W. for San Francisco, lost top-mast, &c., Dec. 12.
Bristol, (Br.) Malaga for New-York, put into Halifax in distress, Jan. 3.
Warren, in collision with schr. R. H. Moulton, lost starboard quarter and stern.
Jane Doten, Port au Prince for New-York, put into Charleston in distress, Dec. 2
Samuel Train, Lisbon for Rio Grande, put into Rio Janeiro, Nov. 14th, dismasted.
Equinox, (Br.) Sunderland for New-York, lost bulwarks, &c.
Syria, (Br.) New-Castle for New-York, lost bulwarks, &c.

James, (Br.) Quebec for St. Ubes, abandoned, very leaky.
Kate Lincoln, Demerara for New-York, lost sails, rudder head, &c.
Wm. A. Banks, Rio Janeiro for Montevideo, lost deck load and masts, Oct. 13.
Rodmond, Hartlepool, E. for Coquimbo, put into Rio Janeiro in distress, Nov. 26.
Massachusetts, (Am.) Ancona for Pembroke yard, put into Malta, very leaky, Dec. 4.
Sea Mew, Africa for Salem, sails, bulwarks, &c. lost, Dec. 13.
Echo, Philadelphia for Boston, went ashore on Quogue, L. I., Jan.
M. E. Trout, New-Orleans for New-York, lost some sails, part of deck load, &c., Jan 13.
Unknown, was seen Jan. 13th off Frying Pan Shoals, wrecked.
Buckeye, was seen with masts gone, &c., Jan. 15.
Gen. Taylor, Baltimore for Portland, lost sails, and a part of deck load, &c., Jan. 8.
Cloelia, New-York for Constantinople, stranded on the Island of Andros.
Horace, at New-Orleans, Jan. 17th, lost foremast.
Elizabeth Leavitt, New-Orleans fer Boston, put back leaking, Jan. 5.
Marion, Rio Janeiro for Philadelphia, lost sails, spanker-boom and gaff, Jan. 9.
Meaco, Boston for Charleston, lost sails, &c.
Olivia, Cardiff for Savannah, was wrecked off Cape Clear, Jan. 9.
Mimosa, Boston for Smyrna, was dismasted, Jan. 4.
Elizabeth Hall, Zanzibar for Salem, lost bulwarks, sails, &c., Dec. 15.
May, (Br.) Boston for Dobey, Ga., put into Yarmouth, Jan. 17.
Mary, New-Orleans for Londonderry, put into Key West leaky, Jan. 11.
Mazeppa, New-Orleans for Boston, put into Key West leaky, Jan. 14.
Kate Hastings, Calcutta for Boston, put into Mauritius in distress, Oct. 30.
Nelson Place, Baltimore for London, lost deck load and leaks badly.
Pristis, Buenos Ayres for New-York, was abandoned, Dec. 10.
Oldenburg, New-York for Havre, put back to former port, Dec. 23d, much damaged.
Unknown, with loss of mainmast was passed, Jan. 10th, in lat. 20 37, lon. 72 58.
Gem, Africa for New-York, was dismasted, Jan. 6th, and went ashore on Block Island, Jan. 9.
White Squall, Rio Janeiro for New-York, lost main and top-sail yard.
Princeton, was seen Jan. 13th with loss of main and mizzen-masts.
Shirley, Rio Grande for New-York, lost sails, &c., Jan. 12.
Bomarsund, (Br.) Liverpool, for New-Orleans, lost masts.
Emma F. Chase, Cardenas, put into Holmes' Hole in distress Jan. 8th, much damaged.
D. S. Goodell, Rio Janeiro for New-York, went ashore near Long Branch, crew saved.
Rival, (Br.) Trapani for Boston, put into Yarmouth, N. S., Jan. 14th, leaky.
Eastern Star, New-York for Callao, put into Rio Janeiro leaky, Dec. 27.
Lean Racer, Palermo for Baltimore, went ashore near Cape Henry, Feb. 9.
C. E. Lex, at Antigua from Philadelphia, with loss of deck-load, sails, spars, &c.
. G. W. Dodge, at New-York from Cienfuegos, lost sails, &c.
Tomatin, (Br.) at New-York from Aberdeen, lost main-top-mast, sails, &c., Dec. 20.
Messenger, Boston for Valparaiso, put into Bermuda Jan. 15th, dismasted.
Isabelita Hyne, China, was wrecked on the coast of California, Jan. 8th, 2 lives lost.
George Thomas, Boston for Havana, put into Key West, in distress, Feb. 1st, much damaged.
Balaclava, (Br.) Mobile for Liverpool, went ashore at Bocca Grande, Feb. 2d, much damaged.
Z. D., Smyrna for Boston, put into St. Thomas Jan. 31st, leaky.
Yarmouth, Venice for New-York, was wrecked in Gibraltar Bay, Jan. 5.
Helen, New-Castle for New-York, put into Aberdeen, Sept. 1.

BRIGS.

Messenger, (Br.) Glasgow for Boston, abandoned in a sinking condition, Nov. 26.
Crimea, Thomaston, Me. for New-Orleans, put into Nassau, Dec. 12.
Linden, for New-York, returned to New-Orleans, leaking badly, Dec. 15.
Unknown, a herm. brig was seen, Dec. 12th, in lat. 37 25, lon. 60 30, water-logged and abandoned.
Mahala, Charleston for Rio Janeiro, put into Pernambuco, Dec. 12.
Unknown, was seen 60 miles from shore, in distress, between Capes Henry and Hatteras.
E. S. Perry, Porto Rico for New-York, put into Norfolk in distress, Dec. 25.
Wm. H. Stewart, Savannah for New-York, leaking badly.
Iza, New-York for Jacksonville, set on fire by burning of steamer Seminole, Dec. 20.
Unknown, wrecked on the Isle of Cuba, between Capes Corrientes and Antonio, Dec. 23.
Geranium, St. Ubes for New-York, was twice struck by lightning, Dec. 23d, and lost spars, &c.
Martha, capsized in lat. 27 S., lon. 22 W.
Eliza Veirsma, (Dutch) New-Castle for Charleston, totally lost on Long Sand, Dec. 12.
P. J. Nevins, (Brigantine) Malaga for Liverpool, in collision with ship Actress, Dec. 9.
Garland, Liverpool for Jamaica, struck on Glassgaman Bank, Id., Dec. 9.
Leverett, (whaler) for Honolulu, put into San Francisco, Nov. 30th, very leaky.

Lauretta, New-York for Aspinwall, went ashore on Sandy Hook, Jan. 4th, is leaking.
E. Drummond, New-York for Aspinwall, lost some sails.
Harriet Newell, New-Orleans for New-York, put into Key West in distress, Jan. 2.
Fanny Whittier, Boston for London, lost sails and sprung a leak.
Brigt. S. Horton, put into Bermuda in distress, Dec. 12th, with loss of sails, &c.
T. A. Cunningham, New-York for Pensacola, totally lost Jan. 2, crew saved.
Henry Marshal, New-London for Charleston, lost some sails, spars, &c., Dec. 26.
David Duffil, Boston for Smyrna, put in into Salem very leaky, Dec. 15.
J. M. Sawyer, New-Orleans for Boston, put into Holmes' Hole, Jan. 10th, very leaky.
Gazelle, Surinam for Salem, put into Bermuda, leaky and in distress, Dec. 18.
Marcellus, Rockland for Charleston, stove bulwarks, &c.
Matinic, Boston for Havana, wrecked near Abaco Reef, Dec. 10.
Atlantic, St. Domingo for Boston, wrecked on Long Island, Bahamas, prior to Dec. 13.
Harriet Ann, Baltimore for Halifax, ran ashore on North Point Bar, Dec. 9.
Gulnare, New-Orleans for Charleston, lost sails and leaks badly.
Spitfire, (Br.) Port au Prince, lost part of deck load, Dec. 27.
Mary Pierce, New-Orleans for Boston, lost deck load.
Reville, Trinidad for New-York, lost sails.
Unknown, was ashore on the South Breakers, and the sea breaking over her.
George Albert, New-Orleans for Philadelphia, lost some sails, rigging and spars, Dec. 30.
Geo. Emery, Colorado River, was driven ashore, near La Paz, Oct. 12.
Abeona, Eastport, Me. came ashore at Port Jefferson Inlet, L. I., Dec. 26.
Belle, Savannah for St. John, N. B., got ashore near latter port, Dec. 21.
Kate Heath, Cardenas for New-York, lost sails, main boom, monkey rail, &c.
B. Strout, Manzanilla for New-York, lost boat, stern davits, and fore-sail.
Geo. Stockham, Savannah for New-York, lost part of deck load.
Micmac, Halifax for New-York, got ashore near N. Providence.
Marie Ann, St. Johns, N. F. for Boston, was totally lost, Dec. 26th, near Liverpool, N. S.
Lucy Attwood, Satilla River for New-York, put into Savannah, Dec. 29th, leaky condition.
Zeuluka, was seen, Dec. 21st, water-logged and dismasted, crew saved.
United Brothers, (Br.) for St. Johns, N. F., wrecked on the coast of Newfoundland.
Wicassa, St. Marks for New-York, lost some spars, sails, &c., Jan. 8.
Ellen Monroe, Malaga for New-York, sprung fore and main yards, Jan. 8.
Erie, (Br.) Jamaica for New-York, lost deck load, stove boat, bulwarks, &c.
Orinoco, Wiscasset for Cienfuegos, lost some deck load, sails, spars, &c.
Hermann, Francisco, (Dutch) Amsterdam for New-York, lost sails, bulwarks, &c.
S. Webster, Eastport for New-York, lost part of deck load, &c., Jan. 5.
Francis Arthemas, Jacksonville for New-Bedford, was seen Jan. 16th, in lat. 38 50, lon. 60 09. very leaky.
Edwin, Rio Hache for Boston, put into Newport, with loss of sails, rigging, fore topmast, &c.
Caroline E. Kelly, West Indies for New-York, lost sails, spars, &c., Jan. 12.
Louisa, New-Orleans for Charleston, lost sails, &c., and leaky.
Maria Margaretta, (Dutch) was in contact with ship Colchis, and lost bowsprit, &c.
Sarah Starr, put into Key West, lost head of topmast and top-gallant mast.
Emma L. Cottrell, Boston for Havana, was lost off Green Key, Jan. 1.
Essex, Mobile for Boston, run into by unknown schr. lost bulwarks, masts, &c., Dec. 20.
Rivulet, Philadelphia for Aspinwall, was wrecked by going ashore on one of the Keys near Cuba, Dec. 31.
Sabeina, (Br.) Palermo for Boston, lost spars, sails, &c.
George F. Williams, Cardenas for Boston, put into Edgartown, Dec. 21st, with loss of deck load.
Unknown, (Br.) sunk in the Wallabout, N. Y., Feb. 3.
Helen Maria, Bristol for Cuba, was lost.
Sarah Peters, Malaga for New-York, put into Newport, Jan. 19th, much damage to sails, rigging, &c.
America, at Halifax, lost some sails and spars, Jan. 7.
Robert Mowe, Boston for Montevideo, put into St. Thomas, Jan. 4th, leaky, &c.
Waltham, Attakapas for Baltimore, lost part of deck load, jibboom, &c., Jan. 6th.
Reindeer, Africa for New-York, put into Norfolk, Jan. 18th, in distress.
Alfaretta, Portland for Havana, lost fore and mainmast, Jan. 6th.
Grey Eagle, was seen, Jan 8th, waterlogged and abandoned.
Sylvina, St. Thomas for Philadelphia, lost some sails and leaks badly.
Adeline, Boston for Aspinwall, totally lost near Carthagena.
J. G. Anderson, at Key West, with loss of sails, spars, &c.
Wm. A. Safford, at New-York, from Demerara, was sunk in the East River, Jan. 4, eight lives lost
Hayward, Africa for Salem, lost sails, spars, &c.
Francis Jane, in Hampton Roads, from St. John's, P. R , lost topgallant mast and flying jibboom , January 12.

Eliza Jane, New-York for Sagau, put into Nassau, N. P., Jan. 24th, with loss of spars, &c.
M. B. Davis, Boston for New-Orleans, got ashore on Abaco, Jan. 1st, put into Nassau leaky.
Celestine, New-York for St. Marks, put into Nassau, N. P., Jan. 24th, with loss of spars, &c.
Maria, Port-au-Prince for Boston, lost deck load, bulwarks, &c., Jan. 18th.
G. Spear, New-York for Para, was totally lost at sea, Jan. 6.
Forrest, New-York for Charleston, put into Nassau, N. P., in distress.
Chief, New-York for St. Thomas, put back, January 13th, with loss of jibboom.
Civilian, at Boston, from Pensacola, lost part of deck load, jibboom, &c., January 12 and 13.
South, at New-York, from Galveston, leaking badly.
Gen. Worth, Cardenas for Portland, put into Key West, in distress, February 3d, leaks badly.
Brookline, Pensacola for New-York, put into Key West, February 7th, leaking badly.
Rowland, Eastport, was seen, January 29th, in a sinking condition,
Ætna, St. Johns, N. B., for Matanzas, went ashore on Sheep Key Shoals, Jan. 28th.
T. Allibone, Boston for New-Orleans, put into Nassau, N. P., with loss of rudder.
Henry Guild, Messina for New-York, arrived near New-London, January 2d, lost mainboom.
Helen Maria, Bristol, R. I., for Matanzas, went ashore on Abaco, January 2d, total loss.

SCHOONERS.

Skipjack, Wilmington, N. C., for New-Berne, N. C., abandoned in a sinking condition, Dec. 17.
Lookout, Bucksville, S. C., for New-York, lost a part of deck load.
W. A. Spafford, New-York for Amelia Island, sprung mainmast off Cape Lookout, Dec. 8th.
J. Vail, Apalachicola for New-York, lost sails, stove bulwarks, &c.
Nereid, New-York for Philadelphia, grounded at Tuckerton, Little Egg Harbor, December 24th, lost mainmast.
Catherine H. Bacon, went ashore, December 23d, near Ashateauge Island, Md., crew supposed to be lost.
J. M. Taylor, Guayama, P. R., for Mobile, very leaky, &c.
Susan Ludwig, capsized, November 27th.
Philadelphia, Boston for Cotuit Point, went ashore at Charles.
Eagle, for Bermuda, dismasted, &c., crew saved.
W. P. Williams, Philadelphia for Norwich, sunk at Hurlgate, December 26th.
Marilla, St. Johns, Fla., for New-London, put into Wilmington, N. C., very leaky, Dec. 27th.
Clara Maria, (Ham.) went ashore, December 22d, total loss.
Mary Lynn, York River for Baltimore, grounded in Chesapeake Bay, near North Point.
Vapor, New-York for Charleston, lost some spars, sails, &c., December 16th.
Northern Light, Aux Cayes for Boston, went ashore near Scituate Light, January 13th.
Lamartine, Wilmington for New-York, put into Norfolk in distress.
Charles A. Greiner, Boston for Philadelphia, went ashore off Chancey Creek Light, January 10th
G. B. Sloat, Pensacola for Fort Taylor, totally lost in Charlotte Harbor Bar, December 27th.
James C. Dobbin, North Carolina for New-York, went ashore near Indian River Inlet, Jan. 9th.
Wave, off Charleston Bar, with loss of main and foremasts, December 28th.
Lucinda Jane, Baltimore for Newburyport, put into Portsmouth, January 8th, lost foremast.
Unknown, New-York for Ellsworth, was in Christmas Cove in distress, January 7th.
H. F. Payton, Baltimore for Providence, got ashore on Ohio Ledge, January 10th.
Sam'l P. Lord, is ashore on the Squam, N. J.
Rio Grande, went ashore on Fire Island Beaeh, January 7th.
Maryland, San Francisco for Shoal Water Bay, lost sails, &c., November 7th.
Simeon Draper, Sydney for San Francisco, lost sails and sprung jibboom, &c.
John Silliman, New-York for Baltimore, was blown ashore January 5th, inside of Cape Henlopen.
Clotilda, went ashore in a snow storm, January 5th, inside of Cape Henlopen.
Sarah L. Hill, New-Orleans for Philadelphia, lost a part of deck load, &c.
Sarah Libby, Machias for Boston, ran ashore on Broad Cove, January 3d.
H. W. Grandy, New-York for Philadelphia, in collision with Schr. Golden West, December 30th, much damaged.
Golden West, Baltimore for Portland, in collision with Schr. H. W. Grandy, Dec. 30th, much damaged.
Flandome, Savannah for New-York, lost sails, &c.
Northern Light, went ashore on Grande Key, January 1st, total loss.
Emma, (Br.) Lunenburg, N. S., for New-York, got ashore near Provincetown, January 5th.
Unknown, was seen ashore near Truro.
Unknown, was seen ashore near Pamet Harbor.
R. H. Moulton, Georgetown, S. C., for Boston.
Northern Belle, Fayal for Baltimore, in distress, December 31st.
Mecklenberg, Washington, N. C., for New-York, was wrecked near Chincoteague, December 30th.
Mary E. drifted from her moorings, at Union wharf, Princetown, end sunk, January 6th.

D. S. Mershon, Baltimore for Charleston, stove boat and lost sails, &c.
Henrico, New-York for Richmond, went ashore on Barnegat Shoals, December 31st.
Ultra, New-York for Pernambuco, wrecked on Anagada reef, December 14th.
Sarah A. Hammond, Malaga for New-York, put into St. Thomas in distress, December 15th.
Excelsior, Port au Prince for New-York, went ashore on Barnegat Shoals, prior to January 1st, five lives lost.
Yorktown, Attakapas for Baltimore, lost part of deck load.
Arctic, Gonaives, at Holmes' Hole, lost part of deck load.
C. W. Dyer, Boston for Tangier, run into by Steamer Wm. Jenkins, lost jibboom, &c.
Commerce, (Ketch.) Rio Janeiro for Charleston, lost sails, &c.
G. D. Fisher, Philadelphia for New-York, in collision with unknown steamer, December 21st, total loss.
Fannie Currie, Glasgow for New-York. lost some spars and sails.
C. Mead, Norfolk for New-York, abandoned with loss of sails, December 27th.
Richard Borden, Fall River for Baltimore, put into former port, December 31st, with mainsail gone, &c.
Primrose, Newfoundland, was wrecked at Sable Island, December 8th, crew saved.
Telegraph, Mobile for New-York, went ashore on Grant's Pass, December 20th.
Grace Darling, Savannah for New-York, went ashore on Long Branch, N. J.
Sarah Elizabeth, abandoned after being in collision with Schr. Maryland, December 28th.
Texana, wrecked December 19th, in crossing the river Banard, Texas.
Sarah, Boston for Machias, while anchored off Cape Tyler's Reef, January 3d, dragged her anchor, went ashore near Broad Cove.
George Washington, Nantucket for Boston, struck on Nantucket Bar, January 19th.
Marcia Farrow, Rockport. Me., for Savannah, lost sails, &c.
Ann E. G. Cattell, Philadelphia for New-York, abandoned in a sinking condition, January 16th.
Emma, New-Orleans for New-York, was lost, Jan. 6th.
Jas. Maguire, Cape May for New-York, put into Nantucket, January 19th, with loss of deck load, sails, &c.
Sussex, St. Thomas, went ashore in York River, Va., January 18th.
Bustamente, Hong Kong for Formosa, sunk on the passage.
Julia Rogers, Savana-la-Mar for New-York, sprang aleak, January 12th, lost some sails, &c.
Alabama, Baltimore for West Indies, is ashore near Sharpe's Island, and is leaking.
Kate Helen, Attakapas for Baltimore, went ashore near Cape Henry.
Unknown, capsized, and masts broken, came ashore near Cape Lookout Shoals.
Lion, Pantego, N. C., for Providence, put into Jersey City in distress, January 15th.
Monterey, was adrift off Cape Ireland, N. J., with persons aboard, January 15th.
Mary Niles, Norfolk for New-York, went ashore on Barnegat, January 12th.
G. H. Townsend, New-York for Gambia River, Africa, put into Wilmington, N. C., in distress, January 13th.
Lima, (Br.) Halifax for New-York, lost part of deck load, &c., January 6th.
D. Webster, New-York for Millridge, went ashore on Chatham Bar, February 2d, leaky.
L. H. Nickerson, Kingston, Jam., for Baltimore, put into Charleston, Jan. 28th, lost sails, &c.
S. H Poole, at Wilmington, lost some sails, &c., January 5th, leaking badly.
Adelaide, Attakapas for Richmond, Va., put into Wilmington, N. C., January 30th, leaky.
Fish Hawk, New-York for Norfolk, went ashore at Lynnhaven Bay.
Geo. A. Tittle, Charleston, went ashore on Sullivan's Island Beach, January 28th.
Wm. J. Arthur, Kingston for Havana, was totally lost, January 5th, near Jardinello's Reef.
Ella Simmons, lying in New-York Harbor, sunk by the ice, January 11th.
Lydia Brooks, Virginia for Newburyport, struck on Brown Cow Ledge, Me., and sunk.
Arno, was capsized, January 5th, near New-York, and sunk, four lives lost.
Pacific, Washington, N. C., for New-York, went ashore at Little Egg Harbor, January 5th, three lives lost.
Rio, while laying to, broke from her moorings at New-York, and lost spars, &c.
James Rose, Malaga for Charleston, put into Jacksonville in distress.
Jonas Smith, Savannah for New-York, lost jibboom and bowsprit.
Hornet, (Pilot) went ashore on Cuttyhunk, lost part of keel.
State of Maine, Frankfort, Me., for Cardenas, was wrecked in lat. 40 30, lon. 60 50, January 9th.
Mary Pearcy, Eastport for Providence, lost jib, bulwarks, &c., January 14th.
Francis Arthemius, Jacksonville for New-Bedford, stove bulwarks, &c., January 6th.
J. A. Simpson, Providence for Doboy, Ga., was wrecked off Edisto Island. January 26th.
Amanda Clifford, Portland, Me., for Savannah, dismasted and capsized, January 6th, crew saved.
George Davis, Wilmington, N. C., for Boston, put into Holmes' Hole, Jan. 30th, lost deck load, &c.
Sarah B. James, Baltimore for Boston, put into Holmes' Hole, January 30th, lost deck load, &c.
Wm. H. Hazard, St. Marks for New-York, was seen in lat. 38 40, lon. 68 20, leaking badly.
H. P. Cushing, Cardenas for Philadelphia, put into Newport, January 30th, lost some sails, rigging, &c.

Glenroy, Jamaica for New-York, put into Georgetown, with loss of sails, foreyard, &c., Jan. 19th.
Emma, New-Orleans for New-York, abandoned in a sinking condition, January 8th.
Fred. Wording, put into Boston with loss of deck load, sails, &c.
Emma V., Pernambuco for New-York, put into St. Thomas, Jan. 4th, with loss of sails, spars, &c.
Cosmopolite, Philadelphia for Mobile, went ashore near Cape Hatteras, Dec. 26th.
Sarah Victoria, Cuba for Philadelphia, was totally lost on the coast of North Carolina, Jan. 6th.
Citron, was abandoned in a sinking condition.
Deborah, Washington, N. C., for New-York, lost part of deck load, bulwarks, &c.
Nourmahal, Rockland for New-York, put into Holmes' Hole, Jan. 6th, much damaged.
Amos Faulkenburg, Norfolk for New-York, put back, Jan. 12th, with loss of sails.
Mary H. Mifflin, Mahon's River for New-York, got ashore on Hereford Bar, Jan. 14th.
Col. Lester, is said to be lost on Bahama Banks.
Shaheas, Norfolk for Rockport, Me., put into Newport in distress, Jan. 14th, leaking.
Unknown, two schooners got ashore on Kill Pond Bar, Brass River.
S. H. Flanner, Charleston for New-York, lost part of deck load, foresail and jib, Jan. 12th.
Envoy, Jamaica for New-York, went ashore near Squam Inlet.
Edward Kidder, Boston for Savannah, lost foresail, jib, &c.
Tempter, New-York for Providence, lost sails, sprung jibboom, &c.
Chas. H. Moller, North Carolina for New-York, put into Norfolk, Jan. 30th.
Alfred Rhea, Mason's Creek for Norfolk, lost rudder.
U. S. Lennox, Philadelphia for the Capes of Florida, lost some sails, spars, &c.
J. B. Potts, for Mobile, put into Key West, Jan. 14, with loss of sails, &c.
Baltimore, Salem for Boston, put into Charleston in distress, Jan. 24th.
Connecticut, was seen, Jan. 23d, off Frying Pan Shoals, sinking.
Anna G. Cattell, Philadelphia for New-York, was abandoned in a sinking condition, Jan. 16th.
California, is ashore on Pasque Island, with loss of deck load.
Astrea, Eastport for Baltimore, put into Charleston in distress, Jan. 3d.
Rainbow, New-York for Corpus Christi, put into Nassau, Jan. 15th, lost some spars, sails, &c.
Sarah B. Jayne, Baltimore for Boston, lost deck load, foresail and galley.
Mountain Eagle, Kingston, Ja., for New-York, in contact with unknown barque, Jan. 28th, much damaged.
Hero, Bluehill, Me., for Norfolk, was lost, Jan. 4th, near the coast of New-Jersey.
Mary D. Scull, Havana for Baltimore, is ashore on New Inlet Bar, leaking badly.
Mary C. Ames, Mayaguez for New-York, went ashore on Nantucket, Feb. 11th, total loss.
Anne E. Cox, Mobile for New-York, put into Norfolk much damaged, Feb. 6th.
Emeline, Mobile for Providence, put into Bristol, Feb. 4th, much damaged.
Pedee, Cuba for New-York, put into Hyannis, Feb. 11th, in distress.
Sophronia, Virginia for New-York arrived at Eastport, Me., with loss of sails.
James Hutchins, Bath for Boston, was seen, Feb. 4th, in a sinking condition, took off the crew.
Vermont, at Wilmington, N. C., in distress, from Boston.
Cyclone, went ashore on Nantucket, Feb. 11th, total loss.
Entire, Attakapas for Norfolk, put into Key West, Feb 6th, dismasted.
Venice, New-Orleans for Aranzas, put into Galveston, Jan. 28th, in distress.
Senator, Norfolk for Philadelphia, put back, Feb. 11th, with loss of chains and anchor.
Clarendon, Norfolk for Boston, went ashore near Race Point, Jan. 5th, total loss.

SALES OF VESSELS.

Five-eighths of ship Helen Mar, 511 tons, built at Baltimore, 1854, at auction, Dec. 12th, for $12,100 cash.

Schooner Eliza Lawton, of Harwich, at New-Bedford, 11 years old, 70 tons, at auction, for $1200.

Schooner Henry Fitzgerald, of Providence, sold to the Portuguese government.
Ship Crescent City, 753 tons, built at Rockland, 5 years old, for $35,000.
Brig Eshcol, of Newburyport, for $5,000.
Barque American, 256 tons, built at East Haddam, Ct., Jan. 9, $7,450.
One-third of bark J. Wallis, Jr., at New-York, at auction, for $500.
Schooner Gen. Scott, 140 tons, built at Maryland, 3 years old, for $5,000.
Schooner Harriet Hallock, 174 tons, at auction, Jan. 9th, $4,500.
Brig J. D. Pennel, 144½ tons, built at Brunswick, Me., 8 years old, for $2,400.
Schooner Anna Jenkins, 118 tons, built at Patchogue, L. I., 1851, for $5,500 cash.
Ship Sportsman, of Belfast, 626 tons, for $50 per ton.
Ship Josephine, 620 tons, 2 years old, at Hamberg, for $32,000.

NOTICES TO MARINERS.

Descriptive List of the Day marks along the Florida reefs, from Cape Florida to Sand Key light-houses, arranged in the regular order in which they are passed in going to the southward and westward, erected in conformity to the act of Congress making appropriations for light-houses, light-boats, buoys, &c. Approved March 3, 1853.

The following day marks along the Florida reefs, from Cape Florida to Sand Key light-houses, occupy the positions of the Coast Survey signals used in making surveys on that coast. They are each composed of an iron shaft thirty-six feet high, erected upon iron screw foundations, distinguished by a vane, upon which one of the letters of the alphabet is painted, and above it a lattice-work hoop-iron cylinder or barrel.

Three colors (white, black, and red) are used in painting each signal, to render them as striking to the eye of the mariner as possible, and are so combined that no two adjacent day marks have the same colors upon like parts.

Masters of vessels may ascertain their latitude or longitude with tolerable certainty by examining closely the colors of the beacons as they are approached, and if the letter painted on the vane is distinguished, there can be no mistake in determining their positions.

These day marks are placed on the most projecting and dangerous points of the Florida reef, and are in general from four to six miles from the outside (seaward) shores of the Florida Keys, and within half a mile, in every case, of the edge of the gulf stream.

The depth of water where these signals stand does not exceed four feet at low tide, in any case, and just outside of them to the eastward in the gulf stream, it is of unknown depths.

These day marks may be approached from seaward within a few hundred yards, but it would always be prudent, and particularly with very light winds, or in bad weather, to give them a good berth.

In moderate weather it often happens, especially after easterly gales, that the force and direction of the gulf stream sets across the reefs, and then vessels are imperceptibly carried amid its dangers, although the course steered should, if made good, carry them outside of all danger.

When the master of a vessel finds one of these beacons to the eastward of him, he may be snre that he is between the reefs and the keys, and consequently surrounded by shoals and dangerous rocks.

Cape Florida Light-house—Tower White.—On south point of Key Biscayne, off the south-east point of Florida. Lat. 25 39 56 N., lon. 80 09 29 W.

Fowey Rocks Beacon.—Letter P, painted *red* on the vane; hoop-iron lattice-work cylinder, *white;* shaft and vane, *black.* Bears from Cape Florida light-house, S. 35 41 55 east, (true); distant 5½ nautical miles. Bears from Soldier Key, S. 89 58 16 east, (true); distant 3½ nautical miles. Lat. 25 35 23 N., lon. 80 05 51 W.

Triumph Reef Beacon.—Letter O, painted *black,* on the vane; hoop-iron lattice-work cylinder, *red;* shaft and vane, *white.* Bears from Elliott's Key, No. 1, S. 82 30 26 east, (true); distant 3½ nautical miles. Bears from Soldier Key, S. 21 04 14 east, (true); distant 7¼ nautical miles. Lat. 25 28 37 N., lon. 80 06 50 W.

Long Reef Beacon.—Letter N, painted *white,* on the vane; hoop iron lattice-work cylinder, *black;* shaft and vane, *red.* Bears from Elliott's Key, No. 1, S. 52 15 21 east, (true); distant 3¾ nautical miles. Bears from Soldier Key, S. 13 53 51 east, (true); distant 8 8-10 nautical miles. Lat. 25 26 45 N., lon. 80 07 21 W.

Ajax Reef Beacon.—Letter M, painted *red,* on the vane; hoop iron lattice-work cylinder, *white;* shaft and vane, *black.* Bears from Elliott's Key, No. 2, S. 79 35 43 east, (true); distant 3 9-10 nautical miles. Bears from Elliott's Key, No. 1, S. 26 06 05 east, (true); distant 5 4-10 nautical miles. Lat. 25 24 09 N., lon. 80 07 59 W.

Pacific Reef Beacon.—Letter L, painted *black,* on the vane; hoop iron lattice-work cylinder, *red;* shaft and vane, *white.* Bears from Old Rhodes Key, N. 76 29 51 east, (true); distant 5½ nautical miles. Bears from Elliott's Key, No. 1. S. 15 48 15 east, (true); distant 7 1-10 nautical miles. Lat. 25 22 13 N., lon. 80 08 30 W.

Turtle Reef Beacon.—Letter K, painted *white* on the vane; hoop iron lattice-work cylinder, *black;* shaft and vane, *red.* Bears from Old Rhodes Key, S. 22 20 47 east, (true); distant 4 4-10 nautical miles. Bears from Cæsar's Creek Bank, S. 6 28 07 west, (true); distant 6 1-10 nautical miles. Lat. 25 16 52 N., lon. 80 12 34 W.

Carysfort Reef Light-house.—An iron pile light-house tower and keeper's quarters, *dark color.* On Carysfort reef, near the edge of the gulf stream, and to the eastward of Key Largo. Lat. 25 13 15 N., lon. 80 12 44 W.

The Elbow Beacon.—(Building.)—Letter I, painted *red*, on the vane; hoop iron lattice-work cylinder, *white;* shaft and vane, *black*. Bears from Grecian Shoals beacon, N. 60 45 40 east,(true); distant 2 4-10 nautical miles, Bears from Carysfort Reef light-house, S. 29 29 35 west, (true); distant 5 4-10. Lat. 25 08 32 N., lon. 80 15 40 W.

Grecian Shoals Beacon.—Letter H, on vane, painted *black;* hoop iron lattice-work cylinder, *red;* shaft and vane, *white*. Bears from Sound Point, S. 45 58 23 east, (true); distant 3 9-10 nautical miles. Bears from Basin Bank, S. 21 24 32 west, (true); distant 5 3-10 nautical miles. Lat. 25 07 22 N., lon. 80 17 57 W.

French Reef Beacon.—Letter G on vane painted *white;* hoop iron lattice-work cylinder, *black;* shaft and vane, *red*. Bears from Lower Sound Point, S. 32 33 53 east, (true); distant 5 nautical miles. Bears from Point Willie, S. 10 30 07 east, (true); distant 6 2-10 nautical miles. Lat. 25 02 06 N., lon. 80 21 05 W.

Pickles Reef Beacon.—Letter F painted on vane *red;* hoop iron lattice-work cylinder, *white;* shaft and vane, *black*. Bears from Point Charles, S. 16 57 43 east, (true); distant 5 4-10 nautical miles. Bears from Lower Sound Point, S. 6 34 30 west, (true); distant about 7 nautical miles. Lat. 24 59 22 N., lon. 80 24 55 W.

Conch Reef Beacon.—Letter E painted on vane, *black;* hoop iron lattice-work cylinder, *red;* shaft and vane, *white*. Bears from Rodriguez Bank, S. 4 30 west (by compass). Bears from Key Tavernier, S. 43 30 east (by compass.) Lat. 24 56 36 N., lon. 80 27 50 W.

Crocker's Reef Beacon.—Letter D painted on vane, *white;* hoop iron lattice-work cylinder, *black;* shaft and vane, *red*. Bears from Snake Creek Point, S. 39 15 east (by compass); distant between 4 and 5 miles. Lat. 24 54 21 N., lon. 80 31 26 W.

Alligator Reef Beacon.—Letter C painted on vane, *red;* hoop iron lattice-work cylinder, *white;* shaft and vane, *black*. Bears from Indian Key, S. 66 30 east (by compass); distant about 5 miles. Lat. 24 49 08 N., lon. 80 38 08 W.

Coffin's Patches Light-house.—(Building.)—An iron pile structure is now being erected at Coffin's Patches, near the outer edge of the reef, and about south from Duck Key.

American Shoals Beacon.—Letter B painted on the vane, *black;* hoop iron lattice-work cylinder, *red;* shaft and vane, *white*. Bears from Loggerhead Key, S. 22 16 35 west, (true); distant 5 9-10 nautical miles. Bears from Eastern Sambo Beacon, N. 76 38 59 east, (true); distant 8 1-10 nautical miles. Lat. 24 31 24 N., lon. 81 31 16 W.

Eastern Sambo Beacon.—Letter A painted on vane, *white;* hoop iron lattice-work cylinder, *black;* shaft and vane, *red*. Bears from Geiger's houses, S. 3 29 24 east, (true); distant about 4½ nautical miles. Bears from South Saddle Hills, S. 13 13 01 west, (true); distant 5 nautical miles, Lat. 24 29 32 N., lon. 81 39 55 W.

Sand Key Light-house.—An iron pile structure 121 feet high, painted a *dark color*, surmounted by a lantern painted *white*.

This light-house is 7¼ nautical miles, in a southwesterly direction, from Key West light-house. Lat. 24 27 09 .5 N., lon. 81 52 43 .5 M.

The foregoing beacons were erected under the superintendence of Lieutenant James Totten, U. S. Army, Assistant U. S. Coast Survey. The geographical positions of these beacons, and their bearings and distances from the adjacent objects, were furnished by the Superintendent of the Coast Survey.

Lights on the Southwest Coast of Norway.—The Royal Norwegian Marine Department at Christiana has given notice, that on the 28th of November last the following channel lights were established at the entrances to Egersund, on the southwest coast of Norway:

Fixed Light at Vibber-odde.—This light is placed on the southeastern point of Egero, on the western side of the southern entrance to Egersund.

The height of the light is 69 feet above the level of the sea, and it should be visible, in clear weather, at a distance of 12 miles from S. ½ W. round easterly to N. ¾ E. It will be lighted all the year round.

The light tower stands in lat. 58 24 N., lon. 5 56 east of Greenwich.

The S. ½ W. limit of this light falls just to the eastward of the rocks Ionsbo and Marra, lying on the west side of the channel off Skarvo On the eastern side of the channel, on a S. ½ E. and S. ¼ E. bearing from the light, lie the rocks Isaks-flue and Svanas-flue. The mariner must be careful, therefore, not to bring the light on a bearing to the westward of north, nor to the eastward of N. ½ E. while within 3 miles of the light.

Fixed Light at Grundsundholm.—This light is placed on the northwestern point of Grundsundholm, the innermost and most easterly holm in the western or northern channel to Egersund.

The height of the light is 41 feet above the level of the sea, and it should be visible to seaward in clear weather at a distance of about 10 miles between the limits of W. by S. and W. by S. ¾ S. Inside the islet of Guleholm the light is visible from W. S. W. round northerly to E. N. E. It will be lighted all the year round.

The light tower stands in lat. 58 26¼ N., lon. 5 50¼ east of Greenwich.

This light serves as a guide to vessels passing through the channel leading between the northwest side of Egero and Guleholm (the southernmost of the larger holms lying off Grundsundholm) to the anchorage on the east side of Housholm (to the northwest of the light), and to Skadberghagen inside the light. The channel is narrow and intricate, and should not be attempted without a pilot. All bearings are magnetic.

The Stratford Shoals Light Vessel is reported to have been driven from her station by the ice, also the Iron Can Buoy marking Penfield's reef, Long Island Sound. The Light vessel, if uninjured, and the Buoy, will be replaced at the earliest date possible after the opening of navigation.

The Windmill Light Vessel and the Smith's Point Light Vessels are not at their stations at present, having to leave on account of the ice. Due notice will be given of the time when restored to their places.

Norfolk, Feb. 1.

The new light-house at Cape St. Blas, Florida, will be lighted on and after the 15th of February next. The tower is white, and is fifty feet high. Its location is near the site of the former tower, which was destroyed in 1851. The illuminating apparatus is a fourth order lens, fixed, varied by flashes. The light should be seen in fair weather, from the deek of an ordinary vessel, at the distance of about 13 miles.

A dangerous shoal runs out southerly from the point of the Cape five or six miles.

The Boston *Journal* of Feb. 4, says:—There is neither bell-boat or buoy on Harding's Ledge, the most dangerous ledge in Boston bay when approaching Boston Light. Nun buoy No. 2, "Martin's Ledge," when in its proper place, bears from Boston light about E. N. E.; now it bears about E. S. E., having drifted to its present position more than a month ago. If a vessel approaching Boston light in thick weather should make this buoy, and the master or pilot should shape his course according to printed directions for Light-house Channel, he would in a few minutes find himself on Long Beach. The buoy belonging on Hunt's Ledge, Light-house Channel, is now outside Point Alderton, about two miles from its proper place. There is no buoy on Castle Rocks, Boston lower harbor, in consequence of which several vessels have recently run ashore. Indeed, there appears to be an entire neglect of buoys, which were formerly so thoroughly attended to, and unless immediate measures be taken to put the buoys in their proper places and to replace those that are missing, we may expect to hear of many more vessels in trouble, attended with culpable loss of life.

The Light Ship on Five Fathom Bank was compelled to slip her cable on the 5th inst. The ice was so heavy that it took her adrift. She has got safely into the Breakwater, and will return to her post as soon as the weather permits.

Owing to the shifting of the bar at the mouth of Newburyport harbor, the old towers on Plum Island are again in range for crossing the bar in the deepest water.

On and after the night of the 20th inst. the Bug Light will be extinguished, and the eastern tower illuminated, and will continue so until further notice.

Boston, Feb. 9, 1856.

Buzzard's Bay.—A Black Nun Buoy of the 2d class, numbered 1, has been placed off Naushum Ledge.

A Nun Buoy of the 2d class, red and black horizontal stripes, has been placed on Ribbon Reef.

The new Light Boat for Nantucket Shoals was moored yesterday two miles south of the new South Shoal, in 14 fathoms of water.

British Consulate, Santo Domingo, Dec. 17, 1855.

Sir—I beg leave to inform you that by a proclamation of the Dominican Government, which was published on the 14th of this month, the Dominican Republic is declared in a state of siege, and the ports of Samana, Azua and Romana are closed to commercial intercourse.

As I am aware that there exists some trade between the Turks Islands and Samana, I request your Honor to bring this extreme measure of the Dominican government to the knowledge of the inhabitants of your Presidency, in order to prevent thereby disappointment and losses. The only ports open at present to foreign trade are Santo Domingo and Porto Plata.

I have the honor to be, sir, your Honor's most obedient and humble servant,

ROBERT H. SCHOMBURG, Consul.

Absecom Bell Boat.—Official notice is hereby given that this boat will be withdawn from her station for repairs, and due public notice will be given when she is repaired.

The Iron Can Buoy having been carried away from Ohio Ledge by the ice, its place is temporarily supplied by a twenty-foot Spar Buoy, with perpendicular red and black stripes, placed in eight feet water at low tide.

The Iron Can Buoy on the South point of Goat Island, in Newport harbor, has been replaced.

Gloucester.—The Buoy on Round Rock in this harbor is gone.

Lews, Feb. 8.—Captain Thompson, of the schr. Ellen Bush, reports that the Bell Buoy near Phœnix Island, is sunk stern up.

Norfolk, Feb. 11.—During a storm on the 24th ult., the Puntases Light-house was swept away, with three men in it.

Cay Sal Bank Light-house, otherwise called Double Headed Shot Cay.—With reference to the government notice, dated Oct. 29, 1855, posted in this place and elsewhere, stating that the light on the above named Cay had been reported as extinguished for some time past:

It is now hereby published for the information of all concerned, that a temporary light was erected at the said light-house on the night of the 2d of January, 1856, but which is not visible at quite such a distance as the original one.

It is further notified that the present light will be maintained until the necessary appliances can be obtained for the erection of the permanent light.

The Spindle on Hardy's Rocks, the Buoy on Pilgrim's Ledge, and the Buoy on the West end of Whale's back, below Salem, were carried away during the gale of 13th inst.

Captain Cantillon, of the Belgian barque *Independence Belge*, informs his government, that on the 30th August last, he discovered a small Island, in lat 46 deg. 46 min. South, and lon. 53 deg. 43 min. West, off the coast of Patagonia. Immense numbers of birds were seen flying above the sea grass which surrounded it for miles. It is very dangerous, as it is not described on any chart.

Light-house at Point Conception, Western Entrance, Santa Barbara Channel, California.—A revolving white light, first order of Fresnel, showing a flash every half minute throughout the entire horizon.

The house is situated near the extremity, and on the highest part of Point Conception, elevated about 220 feet above the sea. It consists of a brick dwelling, plastered, of one story and a half, with a low tower, also of brick, and plastered, rising from the centre. The light is elevated about 250 feet above mean sea level, and will be visible in a favorable state of the atmosphere, from a height of 15 feet above the water, at a distance of 26 statute, or 22½ nautical miles.

The latitude and longitude of the Light, as given by the Coast Survey, are:—Lat. 34 deg. 26 min. 47 sec. N., lon. 120 deg. 25 min. 33 sec. W

The following magnetic bearings and distances in statute miles, are taken approximately from the chart of the coast of the same survey.

West end, San Miguel Island, S. 12 deg. E. 24 miles.

West end, Santa Cruz Island, S. 67 deg. E. 39 miles.

The light will be exhibited for the first time, on the night of the 1st of February, 1856, and thereafter every night from sunset to sun rise, until further notice.

San Francisco, Cal., Dec. 27, 1855.

Bartlett's Reef Light Vessel, Long Island Sound, N. Y., has been driven from her station by the ice. She will be replaced at the earliest date possible.

The Corpus Christi Valley and *Advertiser* of the 28th ult., says:—Since 1850, Aranzas Bar has experienced many changes; the same, however, may be said of all the bars on the Texas coast, unless Galveston be an exception. Now our bar is in one of the worst possible conditions, owing, no doubt, to the unprecedentedly long continuation of northers, which have visited this country during the present winter, and which have thus failed to remove the summer accretion of sand upon it: and judging from present appearances, the water is going to continue shallow for the next twelve months. Although there has been, much of the time, during the last five years, from ten to fifteen feet of water on this bar, yet we are compelled, as a cautionary measure, to warn all vessels which may be coming to this place not to load to a greater depth than eight feet six inches, as there is now scant nine feet water on the bar at high tide. But, with the appearance of our usual sea breeze, the water will again obtain its accustomed depth—until then let our caution be heeded.

The following notice of the establishment of a light at Ceuta, on the coast of Africa, in the Mediterranean Sea, has been received from the Hydrographic Office, Admiralty, London:—

"The Spanish government has given notice that on the 1st of December next, a light will be established on the summit of the hill named Cerro de los Mosqueros, on Almina Point, at Ceuta, on the North Coast of Africa, at the eastern entrance of the Straits of Gibraltar.

"The light will be a bright first class light, revolving once a minute. It is placed at an elevation of 476 English feet above the level of the sea, and will be visible in clear weather at the distance of 27 miles.

OLD-FASHIONED EQUIPMENTS AND INEFFICIENCY OF THE NAVY.

THERE are two things which may surprise nautical men, not in the navy, to learn are still in use on board our ships of war, viz., the old-fashioned capstan, and the chain-lightning conductor.

The former is so old-fashioned, and so seldom seen elsewhere, that foreign officers, while visiting our vessels of war, vainly conceive it possible it may be some new Yankee invention, until its operation is explained, when they learn that a lumbering hemp cable, called a *messenger*, has to be used in connection with it and the chain; they then recollect of having read of such capstans having been in use in their ships about twenty years ago, when they were abandoned, and those to which the chain cable is taken directly were substituted.

The advantage the modern capstan has over the old is evident; and those who have used both kinds, regard it as a serious matter to think, where room can be afforded to stow all the appliances of the old-fashioned capstan, such as messenger, nippers, &c; and also in getting under way, how the men can be spared from other essential duties, who are required to attend, and hold on to these troublesome appliances.

It is true we have introduced on board of some of our vessels of the navy, capstans, to which a chain messenger is taken and attached to the cable; but these are only a little better than the old-fashioned capstans, as there still exists that disadvantage of being compelled to use several things in its operation where only one is necessary.

The fittings, or castings, for this chain messenger cost as much, under this compromise between the old and new capstans, as those of the direct-acting capstan; and why the preference should be given by the Bureau of Construction to the former instead of the latter, we are at a loss to determine.

In the English and French navies, Harris's copper lightning conductor, or a modification of it, has been used for many years.

The old chain conductor in use in our navy being iron, is not so good a conductor to lightning as copper, is often broken by the violent motion of vessels in gales, and has to be rigged out, attended, and otherwise prepared at the approach of every squall. It is quite time, after all the experience which has been afforded us by foreign navies, that the modern capstans and lightning conductors should be introduced on board of our ships of war.

In the second volume, pp. 527–35, of this magazine, may be found a full review of "shipwreck by lightning," and the lightning protectors of Sir W. S. Harris, and also Mr. R. B. Forbes' * publications on the same subject. In Sir W. S. Harris's summary, though he does not pretend to comprise the

* Mr. R. B. Forbes, Boston, is agent for Harris's Conductors in the United States.

whole, he gives 235 well authenticated cases of naval vessels damaged by lightning, from the year 1793 to 1848. The destruction of material in these were—damaged or destroyed, 180 lower masts, of which 133 were of ships of the line and frigates; 172 topmasts, two-thirds of which were of ships of the line and frigates; and 140 top-gallantmasts, nearly all of which were of large ships, besides great injury and destruction of other spars, sails, rigging, &c. The loss of life and injury in the same ships, were nearly 100 killed, and about 250 rendered pensioners on the government. One-sixth of the ships were set on fire, and some of them in great peril, and the loss to the government for the same period is estimated at £150,000.

These facts are drawn from a long detail of similar ones which could be furnished from the records and present customs of our own service, yet they are not even alluded to in any of the *scientific* reports *to* the Hon. Secretary, while a new *corps* is called for, whose province it will not be to discover them. It used to be the case that the approval of the British Admiralty was a sure road to scientific improvement in our navy, whether of American or foreign origin. But with increase of age, our old vessels of war and their equipments seem to have gained strength. They are passed over as so many in the count. New ones of the same kind are added, until, judging from our "list of vessels of war," compared with the number actually employed, a special appropriation by Congress will be required to remove them from the stations which they are encumbering.

American invention, on nautical matters, is at a premium in England; but, at home, all are too perfect for improvement. It would spoil the station bill to erase *man the conductors*, and a sailor would not pass for a seaman who is not up to all the kinks of a *messenger*. With our ships as they are, these things are necessary and efficient—efficient when they were made and adapted to them. The *ship's hull* might, in many cases, head the list of the *old-fashioned*, were it not the case that *new* ones are still built, where the *exercise of the bent position* is an essential requirement of the whole crew, when between decks.

Since the action of the late *efficiency board*, public sentiment has taken such hold on the navy, as to create room to hope that much good may yet be derived from it. For a period of nearly thirty years, the navy had been left to slumber in unchanged sheets. Ships, equipments, exercises—all like the personnel, had nearly slept its last sleep in a death-bed of growing evils, before a question on its policy could be made so manifest to landsmen as to bring it into Congressional discussion.

Previous to 1841, executive patronage only was courted for place and power in the navy. The evils of this were shown forth by the augmentation of the various grades, and increased eagerness for appointments and promotions. Congress acted then much as it did in passing the act of last session, by attempting to check the evil without eradicating its cause. In

the former case, a veto was placed on the further increase of officers of any of the grades, than what they numbered on the 1st day of January, 1841. From that time until the efficiency act of last session, no merit, however great, no conduct, however gallant, could hasten the promotion of any officer in the navy, while the number waiting commissions was constantly increasing. The first step on the ladder of promotion had to be taken in a dead officer's shoes—a condition of things well calculated to blunt moral sensibilities and generate implacability. Fifteen years was quite long enough to make the least sensitive expectant keenly feel that he had a long probation, without any of the benefits of those above him, who were never subject to the burthens of his position.

Last winter the culminating point seemed to have arrived. Naval reform, which had so long been the cry, was echoed in Congress, and an act passed with the object of doing some good—good to all, honor for the inefficient, promotion for the efficient, and for the unworthy—good for them and the service—not to be in the navy at all. This was, at least, a good beginning, and it is not too late yet for a good ending. Remedies can no doubt be found equal to the amount of mischief created by the misapplied power of the board of naval officers, assembled to carry out the provisions of the law; but it is hoped that naval reform will by no means stop here. Another Board is needed now, for all the purposes for which that was assembled, and for much more too.

Public opinion is now called to the navy. Let every friend of it, in or out, join the call, and instead of squabbling for place and power, harmonize on a *thorough examination* of its constitution and quality, for the benefit of the *country*, not of this nor that class of men. If we have about *eighty vessels* of war, and only *thirty-two* employed, why do we want more new ones? If two-thirds of what we have are only fit to rot at our dock-yards, let the country know it. If we need an appropriation for new steamers to carry *eighteen feet* of water into most of our southern ports, we certainly ought to have them; but we must not lose sight of the fact, that "most" of them will need an additional appropriation of water.

Between the dates of the two special acts of Congress, above referred to, our territory has amazingly increased, and we have a large accession of ports, into which our men-of-war should enter, and our tonnage has been doubled. In the same period of time, steam has been introduced into naval vessels, and heavy ordnance, with hollow shot and shell, brought into play; but, strange as it may seem, we do not yet know anything scarcely, by direct experiment, of the benefit of steam and heavy ordnance, in naval warfare: whether, at given distances, we can strike a target, the size of a ship, *one* time or *nine* times out of ten. No one can say,—no one has tried it!

We do not mean to say that these big guns have never been exercised at sea, at anchor, during calms, and smooth sea. But are naval battles at all

likely to take place under these conditions? Let a target, of the size of a ship, be painted on the side of a rock, and then let a ship take her position, regardless of wind and weather, and there practice, and *practice*, until the science of ordnance is practically demonstrated, as to what we can do with big guns.

Position, seamanship, and manœuvring, used to win battles on the sea; but that day has gone by. Steam, heavy ordnance, and marksmanship, require at our hands a well demonstrated utility.

COMMODORE MORRIS.

THE death of this distinguished officer was announced, just as our last number was going to press. From the *Washington Union* of January 2, we adopt the following well-merited notice:

This distinguished officer entered the naval service on the 1st July, 1799, as acting midshipman, and had thus completed a term of more than half a century in active employment in the various ranks and positions of his profession.

Prominent among the achievements which established his exalted character as an officer, at an early period of his life, it may be stated, that, while a midshipman, he took part in the destruction of the Philadelphia, in the harbor of Tripoli, by Decatur, in 1804. In 1812, he was first lieutenant of the Constitution, under Hull, during the memorable chase by the British squadron, off the Delaware; his consummate skill and ability on which occasion was honorably acknowledged by Commodore Hull, by a complimentary card posted in the Exchange at Boston.

Again he served as first lieutenant of the Constitution, in her glorious action with the Guerriere, August 19, 1812—the first naval engagement of the second war with England, and which dissipated her boasted claim of supremacy upon the seas.

For his conduct in this engagement, Lieutenant Morris was promoted to a captaincy over many officers of his own grade, as well as over the whole list of commanders—the only instance in our naval records of such advancement, and a striking proof of the bravery and ability he had displayed on these two trying occasions.

His first command after his signal promotion was the frigate Adams; after a short cruise, he was chased into the Penobscot by a superior force, when, to prevent his vessel falling into the hands of the enemy, he destroyed her by fire, successfully transferring his officers and crew to Boston, through the woods of Maine.

As a husband, father, and friend, those who knew him best in these endearing relations, can bear the strongest tribute to his merits and worth; for

his private life was, in every sense, as irreproachable as his official career was distinguished.

The system which characterized all his public acts, extended likewise to his domestic life—a striking illustration of which may be found in the continuance of his diary up to the day of his confinement to the house by his last illness, (8th January), and certain succinct directions he left, in regard to all the arrangements of his funeral.

GENERAL ORDER.

NAVY DEPARTMENT, *January* 28, 1856.

The Navy Department announces to the navy and the marine corps, the death of Commodore Charles Morris. He died at his residence in the city of Washington on Sunday afternoon, the 27th inst., at 30 minutes after 4 o'clock, in the 72d year of his age. He met his "inevitable hour" with the composure of a Christian.

As a mark of respect, it is hereby ordered that the flags at the several navy-yards and stations, and on board of all vessels of the United States Navy in commission, be hoisted at half-mast, and thirteen minute guns fired at meridian, on the day after the receipt of this order; and that officers of the navy and marine corps wear crape on the left arm for thirty days.

J. C. DOBBIN, *Secretary of the Navy.*

LAUNCHES.

At Brooklyn, L. I., Feb. 9th, by Lawrence & Foulks, bark Corilla, 130 feet length, 28 beam, 16½ feet hold.
At Providence, Jan. 24th, schooner A. H. Manchester, about 300 tons.
At Bath, Jan. 21st, ship Sunshine, 1467 tons, 217 feet length, 39½ feet beam.
At Prospect, Me., Jan. 1st, bark T. Cushing, about 400 tons.
At Rockport, Me., Jan. 3d., bark R. A. Allen, 1450 tons.
At Marblehead, Jan. 22, a ship of 1200 tons.
At Newburyport, Jan. 28, ship East Indian, of 900 tons.
At Newburyport, Jan. 28, ship Indus, of 900 tons.
At Portsmouth, Jan. 26th, ship Witch of the Wave, 1100 tons.
At New-York, Jan., by W. H. Webb, Esq., ship John H. Elliott, 1200 tons.
At New-York, by A. C. Bell, schooner Joseph W. Webster, of about 400 tons, Jan 29.
At Brooklyn Navy-Yard, N. Y., U. S. Steam Frigate Niagara, by George Steers, Esq.
At New-York, Jan 22, by A. C. Bell, Esq., a bark of 250 tons.
At Bath, Feb. 6, by Messrs. Trufant & Drummond, bark Palermo, 500 tons.
At New-York, by A. C. Bell, Esq., ship Kitty Simpson, of 700 tons.
At Cape Elizabeth, Jan. 11, a brig of about 225 tons.
At Chelsea, Jan. 26th, by John Taylor, Esq., ship Cambridge, of 1500 tons.

From the London Times, Jan. 2.

THE NAVY OF ENGLAND.

A COMPILATION made from the official Navy List, published yesterday, shows a number amounting to 456 ships and vessels of every denomination comprising the British fleet. Of this force 301 ships and vessels are in commission, and employed in various ways, as 131 gun line-of-battle ships down to the one gun, mortar, or gun-boat, and the steam yacht mounting no armament at all. Ten years ago we only had 233 vessels as a grand total of all classes in commission, and nearly all those were sailing vessels; now the character of the service is so thoroughly changed that nearly all are steamers, and such few sailing vessels as are yet doing duty are being set aside as fast as their terms of commission expire. Thus, this week we have that noble three-decker, the Neptune, 120, Capt. Hutton, laid up in ordinary, to make room for the more modern steam bulwark, the Marlborough, 131; and so the work of change will progress, until a sailing man-of-war will become as great a novelty in the British fleet at sea as was the steamer at the time of the "venture" of the little Comet. The staff of the fleet has also changed with the growth of its metamorphosis, as will at once be perceived by the following statistics, showing the division and subdivision of the various grades since the termination of the war in 1816, in which year there were—

Flag officers	343	Pursers	957
Captains and retired do.	883	Naval Instructors	—
Commanders and retired do.	894	Chaplains	62
Lieutenants	3,776	Mates	—
Marine officers	3,336	Second Masters	—
Masters	693	Acting Assistant Surgeons	—
Medical officers	1,537		

1856.

Flag officers (22 in commission)	319	Masters	322
Captains (active)	396	Do. reserved list	144
Captains (retired)	164	Inspectors of machinery	3
Captains on reserved list	50	Chief engineers	125
Captains of Greenwich	4	Mates	198
Commanders	569	Second masters	116
Do. reserved list	205	Chaplains	159
Do. retired list	349	Naval instructors	90
Lieutenants of Greenwich and Naval Knights of Windsor	44	Medical officers	592
		Do. retired	308
Lieutenants	1,173	Paymasters	511
Lieutenants on reserved list	784	Assistant do.	178
Marine officers	435		

It is estimated that we may count upon having this summer, available for the purposes of war, forty or more line-of-battle ships and heavy frigates of the right class, upwards of twenty corvettes and heavily armed sloops, and upwards of 170 gun and mortar boats and batteries. The Baltic alone, it is inferred, will have a fleet of nearly 250 pennants over steam, and it is rumored that Sir Edward Lyons will be the grand commander-in-chief. In glancing at the before given figures, it will strike the reader probably as curious, that whereas at the close of hostilities in 1816 there were 3,776 Lieutenants on the Navy List, we have now, when in the midst of another war, but a total of 1,976; of this number, 1,778 only are represented as on the active list.

OUR LOG BOOK.

New-York.—The store ship Relief sailed for the Brazil squadron, on the 26th ultimo. The following is a list of her officers:

Lieutenant-Commanding — James W. Cooke. Lieutenants—Watson Smith, Theodore Lee, Chas. P. McGary and J. P. Fyffe. Purser—Caleb J. Emery; and Passed Assistant Surgeon—Chas. H. Williamson.

The steamer Dispatch is to be tender to the Pensacola station. Her officers are:

Lieutenant-Commanding—Thomas M. Crossan. Lieutenants—John T. Walker, George W. Young and John J. Cornwell. Assistant Surgeon—James Laws. First Assistant-Engineer—J. H. Maury; Second do., J. C. E. Lawrence; Third do., H. A. Ramsay.

Launch of the U. S. Steamer Niagara—The launch of this vessel having been deferred in consequence of the severity of the weather, took place on Saturday, Feb. 23d, at 11 A. M., and was witnessed by a large concourse of people. The day was mild and auspicious, and the ship started without screw or ram, notwithstanding she had been laying on her tallow some two or three weeks. We have not the space at this late period in the month to make more than a passing remark that it was a very good launch, without breaking beams or knees, nor yet straining the ship. We shall, at an early day, furnish an article on the philosophy of launching, with an illustration of the preparations of the Niagara.

The steamer Merrimac is finally ordered on a useful trial trip, to cruise on the coast and render assistance to vessels in distress.

The latest intelligence from the East Indies announces the death of Commodore Joel Abbot, of the East India Squadron.

A Board of Medical Officers, consisting of Surgeons J. M. Green, Samuel Barrington, Jonathan M. Foltz, and Passed Assistant-Surgeon Joseph Wilson, for the examination of candidates for promotion, and for the office of Assistant-Surgeon, is ordered to convene at the Naval Asylum, Philadelphia, on the 1st inst.

Arrival of the Powhatan.—The U. S. Steam Frigate Powhatan, Capt. Wm. J. McCluney, arrived at Norfolk on the 20th ult., from Japan and the China Seas, and last from Table Bay, Cape of Good Hope, after a pleasant passage from the Cape of 38 days, about half the distance from the Cape to the United States, under canvas alone.

The Powhatan was one of the East India and Japan Squadron, under Commodore Perry. She has been absent on this cruise three years, and in commission three years and a half. During her present cruise she has visited the following ports, viz.: Island of Madeira, Island of St. Helena, Table Bay, Cape of Good Hope, Mauritius, or Isle of France, Pulo Pinang, Singapore, Island of Labuan, Borneo, at which place Capt. McCluney rati-

fied a treaty with the Sultan of Borneo, thence to Hong Kong, Macao, Whampoa and Canton, Amoy, Foo-choo-fou, Ningpo, Shanghae, Gulf of Pechile, in the Yellow Sea, the Loo Choo Islands in the Pacific, and thence to Japan.

The Powhatan has made the passage from Hong Kong, China, to Norfolk, in 77 days, actually at sea, having left there on the 1st of November, 1855; she has been in different ports 28 days out of that time to fill up coal.

IMPORTANT ERRATA.—The following information has been received from the Secretary of the Lake Board of Underwriters:—

"MESSRS. EDITORS:

"In your January number, the article on Signal Lights is correct, as published in that number. It should read Starboard instead of Larboard tacks, on line 8, and 13 from bottom, of page 306."

We announced it as an error in the February number, in conformity with the wishes of a party who called upon us in person.

OUR STATE ROOM.

SAILORS' TRADE AND WOMAN'S RIGHTS.—A few weeks ago a man was shipped, according to law, at the Naval Rendezvous, New-York, for general service, understanding well all the obligations he took upon him. After he had been for a time on board the Receiving Ship, by means of a *habeas corpus*, he was taken before a New-York Recorder and held to answer to the complaint of his wife, who had procured its issue, that by going to sea he would neglect her! The tender-hearted Recorder decided to discharge the man from the naval service, and the obligations which he sought and willingly entered into, on the ground that his first duty was to his wife.

CALCULATIONS OF CLIPPER SHIP HERALD OF THE MORNING.—The calculations of this vessel from Mr. S. H. Pook, in connection with the result of three consecutive passages, from Messrs. Z. Magoun & Sons, came to hand while the first form of the present number was on the press, and consequently too late to form a part of the article.

The displacement, at a draught of 22 feet of water, is	2551 tons (of 35 cubic feet.)
Exponent for displacement, is	·60
Centre of gravity of displacement, forward of centre of length	2·
Centre of gravity below load-line	7·
Meta centre above load-line	0·25
Centre of effort of sails, forward of centre of displacement	8 feet.
Height of do., is	59·50 above water-line.
Area of principal sails	15025 feet.
The exponent of area dead flat frame, is	·88 "

Jan. 21, 1854—Boston to San Francisco, cargo 2,004 tons, drawing 20 ft. 2 in. forward, and 20 ft. aft; 106 days passage.

Feb. 5, 1855—New-York to San Francisco, cargo 2,098 tons, drawing 21 ft. forward, and 20 ft. 8 in. aft; 99 days and 12 hours passage.

Sept. 5, 1854—Callao to New-York, via St. Thomas for orders, cargo, gross tons, 1,441, drawing 21 feet forward, and 20 ft. 8 in. aft; 77 days passage.

TYPES OF TRAVEL and NEW BOOKS crowded out.

ICONOGRAPHIC CATALOGUE OF THE U. S. NAVAL LYCEUM, AT THE NAVY-YARD, BROOKLYN, N. Y.

Part II.

NATURAL HISTORY.

SECTION I.—MINERALOGY.

TAKE a bath in molten lava! Who does not shudder at the thought? And yet, who has not performed the horrible operation time and again? Let us see.

As we look abroad upon this fair world, we find it composed of rocks, soil, and water; to be covered with plants of various kinds, and peopled with myriad tribes of animals. These three familiar facts are the corner-stones of three primary branches of knowledge. Do we attempt to reduce to system and classification the apparently innumerable and totally dissimilar races of animals, we are but pursuing the study of zoology: does the vernal beauty and vast profusion of the vegetable world engross our attention, we are launched into the depths of the science of botany: while the rugged rocks, the vast ocean, and the sand of the shore, present a no less inviting study to the mineralogist. The sciences of zoology and botany, then, refer to the study of organized and living matter; while mineralogy, with its adjunct, chemistry, includes all inorganic matter. Hence, we see the propriety of our opening remark. For, in what does water differ from other rocks? or what good reason can be presented why we should not call it a rock, and classify it as such? Is it liquid at ordinary temperatures? So is mercury; and yet none would refuse to classify mercury under the general head of minerals. Reduce the temperature of the atmosphere a few degrees only, and your liquid becomes, to use the ordinary phrase, "as hard as a rock." Raise the temperature of the globe a few hundred degrees, and all that we now esteem solid, would present the same fluidity as does water. Still farther, heat water to a temperature of 212°, and it vanishes into thin air, becomes an invisible (for it is only when partially condensed that steam becomes visible) elastic gas, or vapor. Here, then, we have our rock converted into a gas resembling in its mechanical properties the air; yet condense the steam once more, and you have your liquid; reduce the temperature still farther, and you have your solid rock. "Ah!" says the conservative, who does not fancy giving up his prejudices so readily, "you draw too large conclusions from too small premises. You have taken an exceptional case, and upon that you build up a whole science. Because water is capable of being solidified, you call it a mineral; and because you can make it assume a gaseous state, you call air and all other gases minerals." There is a gas called carbonic acid gas, resembling in all mechanical respects the air. You can obtain it, if you are bold enough to try the fol-

lowing experiment, by pouring sulphuric acid upon marble. Place some of these substances in a suitably strong vessel, and let the gas, as it is formed, be confined to the vessel, so that its density may be constantly increasing. Soon you will see a liquid gathering in the condenser. What is it? Why, it is that gas that you won't allow me to call a mineral, taking to itself the form of water. Now open a small passage-way for the confined liquid; it will rush out with immense velocity, and as it issues, half of it will return to the gaseous state, and half will fall down in the form of a solid. That solid has a temperature of 90° below zero; and if the average temperature of the globe were 90° below zero, we should be as familiar with carbonic acid rock as we are with granite. Plainly, then, nothing but a preconceived opinion deters one from classifying all inorganized matter with what are called minerals.

To conservatism we have devoted considerable space, with the view of clearing ourselves at the outset of such embarrassments as might hinder our readers from clearly comprehending the scope of

MINERALOGY.

With such unexampled facilities for obtaining specimens from all parts of the globe, no one can be surprised at the extent and beauty of the cabinet in the Naval Lyceum, or at finding among its specimens many which present a large field for scientific research; yet the members of the Lyceum have fallen far short of their whole duty, in not making still more use of their extraordinary opportunities for constituting this one of the finest collections in the world. With so many collectors in the field continually visiting foreign countries, the mineralogical department should stand unrivalled. There is, however, but little difficulty in excusing such apparent remissness, on the ground that but few of the officers of the navy are familiar with the science; and those who are not, would be more likely to select objects illustrating the habits and customs of the people whom they visit; while none but a mineralogist could rightly determine upon the value of minerals. Hence we find a profusion of crystallized and attractive specimens; while rarer ones, possessed of more value and less beauty, are entirely unrepresented. Let all remember, that the most unsightly rock may conceal a treasure which would make the heart of the mineralogist jump for joy.

It has been our object in arranging and classifying the specimens, to supply as far as possible the deficiencies. In this we have in a great measure succeeded. Time, however, is required for such a purpose; and to facilitate the work, donations and exchanges are most earnestly requested, from all who feel an interest in the Lyceum or the science.

A mineral may be defined to be a substance destitute of organization and vitality; which is equally perfect in the smallest grain and the largest mass; whose individuality is not destroyed by subdivision; whose formation de

pended upon the force of chemical attraction; and which, consequently, is not liable to decomposition, like animals and plants.

Mineralogy is a science of such interest, that it would be a matter of deep regret were its real object misunderstood. It is not confined to the study of rare and curious specimens. On the contrary, although these form no mean part of the study, it stoops to gather the sand and gravel under its feet, and climbs the loftiest mountains to examine their structure. It descends into the bowels of the earth; and rising thence, soars to the higher regions of the atmosphere.

It is proper here to draw the line between mineralogy and geology. Mineralogy examines the constituents and character of individual minerals. Geology treats of the character and composition of their compounds—thus: granite consists of quartz, felspar, and mica. Mineralogy would examine each separately. Geology considers them in their aggregate condition.

Minerals may be distinguished by their outward appearance, or by their chemical composition. They exist in every possible form and variety, from the beautiful crystal, with its delicate outline, to the rough, unshapen mass. The arrangement of the collection is based upon the classification of Dana, and may be enumerated as follows:

Class I.—Gases consisting of, or containing, nitrogen or hydrogen.
" II.—Water.
" III.—Carbon and compounds of Carbon.
" IV.—Sulphur.
" V.—Compounds of the alkalies and earths with the soluble acids, (sulphuric, nitric, carbonic, &c.,) or of their metals, with chlorine and fluorine: 1. Salts of Ammonia; 2. Potash; 3. Soda; 4. Baryta; 5. Strontia; 6. Lime; 7. Magnesia; 8. Alumina.

Class. VI.—Earthy minerals: 1. Silica; 2. Lime; 3. Magnesia; 4. Alumina; 5. Glucina; 6. Zirconia; 7. Thoria.

Class VII.—Metals and Metallic Ores: 1. Metals easily oxidizable; 2. Noble Metals.

Those represented in the Lyceum collection are designated by a *.

CLASS I.—GASES.

1. Containing or consisting of nitrogen as air, nitrogen. 2. Containing hydrogen, as carbureted, sulphureted, phosphureted hydrogen, muriatic acid. 3. Containing carbon or sulphur, carbonic acid, sulphurous acid.

1. *Atmospheric Air.*—Composed of oxygen 21 per cent. and nitrogen 79 per cent. Constitution always unaltered; 815 times lighter than water; 100 cubic inches weighing 31 grains.

2. *Nitrogen Gas.*—An elementary substance. It bubbles up through the

waters of many springs, as at Lebanon, in New-York State. At Bath, England, nitrogen escapes at the rate of 222 cubic feet per day.

3. *Carbureted Hydrogen.*—Composed of carbon 75 per cent., hydrogen 25. Burns with a bright yellow flame; the same gas which is used in our houses. It issues in great quantities from some coal beds and beds of bituminous slate. At Fredonia, in Western New-York, the gas issues so freely from a slate rock that it is used for lighting the village, and no complaints have ever been made of dame nature as to the quantity or quality of the gas which she thus furnishes. Gas companies, attention!

4. *Phosphureted Hydrogen.*—Phosphorous, 91.29; hydrogen, 8.71. It takes fire spontaneously on coming into the atmosphere, is produced in marshy places, and is supposed to be the cause of that mysterious appearance termed the Jack-o'-Lantern.

5. *Sulphureted Hydrogen.*—Sulphur, 94.2; hydrogen, 5.8. It has the odor and taste of putrescent eggs, or rather putrescent eggs have its odor and taste owing to its formation in them. Abundant in the springs of Western New-York, also found about volcanoes. It blackens silver, and also a common cosmetic, made of the oxide of bismuth, as many a fine lady has found to her great mortification.

6. *Muriatic Acid.*—Hydrogen, 2.74; chlorine, 97.26. Is of a pungent odor and acrid to the skin. Is given out freely from some volcanoes.

CLASS II.—WATER.

The well-known liquid of our streams and wells. Now, Conservatism, we have arrived at your clog. Hydrogen, 1 part, to oxygen, 8; becomes solid at 32° Fahrenheit, and then crystallizes. As found upon the surface of the earth, it always contains atmospheric air, which alone makes it palatable and capable of supporting the life of water animals. In most springs there exists a minute portion of some salt of lime and other foreign substances. The Long Pond water used in Boston contains, or did before the good people there raised such an outcry against it, half a part solid matter in 10,000. It is almost impossible to say what it contains now, especially if we are to give credenee to their accounts.

The croton 1 to 1½ in 10,000. Schuylkill 1 in 10,000. Sea water contains 32 to 37 parts of solid matter in 1,000 parts water. Dead Sea water from 200 to 250 in 1,000. The substances held in solution vary with the different regions through which the water flows. Whatever is soluble is of course taken up by it.

CLASS III.—CARBON.

Occurs crystallized in the diamond. Massive, and more or less pure, it constitutes mineral coal and plumbago; combined with hydrogen it forms bitumen, amber, and other mineral resins.

1. *Diamond.*—Color varies from white to jet black. It is pure carbon, easily distinguished by its superior hardness. Found in India, Brazil, Ural Mountains, and in the United States at Rutherford County, N. C., and Hall Co., Ga. The original rock appears to be a granular laminated quartz rock, known as "itacolumite." They are supposed to be like coal, of vegetable origin. Some crystals have been found with black, uncrystallized seams within, looking like coal. Diamonds, with few exceptions, are obtained from alluvial washings. It is a singular fact that there has never as yet been found a diamond whose surface was not scratched and scored to a greater or less extent. Now as nothing will scratch the diamond except the diamond, we must infer that there is some grand repository where they are stored and scratched. If that be not the true explanation, what is? Probably when we annex Brazil, some Yankee will discover this grand diamond hole, and bring home a few ship-loads of them to astonish our friend Conservatism.

2. *Coal.*—Color, black or brown. Composition, carbon, with a few per cent. of silica, alumina, or oxide of iron. So well known as hardly to need description. Varieties, 1. Anthracite.* 2. Bituminous—*Pitching or caking coal; Cannel coal;* Brown Coal or Lignite; Jet;** Mineral coal occurs in extensive beds or layers, undoubtedly of vegetable origin. It is widely distributed over the earth from the equator to the poles. Nowhere, however, is it more extensively displayed than in the United States. A singular variety has lately been found in the Arctic regions, a specimen of which is before us as we write. If the natives of those regions knew what was best for themselves they would set fire to their coal mine and for a few years defy the cold terms of Jack Frost and E. Merriam combined. Probably they dread the relapse which would ensue when their mine was exhausted.

3. *Graphite—Plumbago.**—Erroneously called Black-lead. Composed of carbon, 90 to 96; iron, 4 to 10 per cent. Its principal English locality is at Borrowdale in Cumberland. Ure observes that this mineral became so common a subject of robbery a century ago as to have enriched many living in the neighborhood. The utmost measures of precaution are still required. In some years the net produce of the *six weeks* annual working of the mine has amounted to £40,000. Found in many places in the United States, of which the best is that of Sturbridge, Mass. Used in the manufacture of pencils, for diminishing friction in heavy machinery, and for the manufacture of crucibles and furnaces.

4. *Carbonic Acid.*—Composition, carbon, 27.65; oxygen, 72.35. Found in the waters of Saratoga and other mineral springs. Used also for the manufacture of soda water. The Grotto del' Cane, near Naples, is a small cavern filled with this gas. It does not support life or combustion, which the keeper of the cave will prove to you, if you have the inhumanity to ask it, by holding a dog, kept for the purpose, in such a position as to breathe the

gas; he is soon withdrawn, apparently lifeless; he quickly recovers, however, picks up his reward, a bit of meat, and runs off as lively as ever. This gas is an important constituent of marble and other limestones.

5. *Amber.*—Color, yellow. Composition, carbon, 70.7; hydrogen, 11.16; oxygen, 7.8. A resinous substance, supposed to be of vegetable origin.

6. *Mineral Caoutchouc.*—Composition similar to the above, found in soft flexible masses, much resembling India rubber.

7. *Bitumen.*—Composition, carbon and hydrogen in varying proportions. On the island of Trinidad there is a remarkable locality, where there is a lake of it about a mile and a half in circumference. On the shores it is cold and solid, but in the centre it is boiling.

CLASS IV.—SULPHUR.*

Exists abundantly in the native state, and also combined with other substances. Found native in the vicinity of volcanoes. The native Sulphur of commerce is brought mostly from Sicily. There are some very fine specimens from this locality in the Lyceum collection. Its uses are various, and well known. The manufacture of gunpowder consumes a large quantity.

CLASS V.—HALOID MINERALS.

1. *Ammonia.*—The Salts of Ammonia are more or less soluble, and become volatile when subjected to a high heat.

The chief varieties of this division are Sal Ammoniac; Mascagnine; Struvite. Found principally in volcanic regions.

2. *Potash.*—The most prominent Salt of Potash is the Nitrate,* common Saltpetre. Composition, Potassa, 45.56; Nitric Acid, 53.44. It is used extensively for the manufacture of gunpowder, and of Nitric and Sulphuric Acids. Occurs in Kentucky and many of the Western States, also abundantly in Spain and Egypt.

3. *Soda.*—The principal Salts of Soda are the Sulphate—*Glaubers Salt,* Nitrate and Carbonate—*Natron.* Of these the first is composed of Sulphuric Acid, 24.85; Soda, 19.38; Water, 55,77. Used largely in medicine, They who have experienced it probably need no further description of its properties. Found near Genesee Falls, N. Y.

Common Salt, which is composed of Chlorine, 60.3; Sodium, 39.7; may be properly classed here. Borate of Soda or Borax is found in the lagoons of Tuscany.

4. *Baryta.*—(1.) Sulphate of Baryta,* or heavy spar. Composition, Sulph Acid, .34; Baryta, .66. Found abundantly at Cheshire, Conn., and used as paint, and in the adulteration of White Lead.

(2.) *Witherite.*—Baryta, 77.6; Carbonic Acid, 22.4; Carbonate of Baryta

very poisonous ; is employed in the dignified business of killing rats. Found at Alstonmoor in Cumberland.

5. *Strontia.*—(1.) Sulphate of Strontia—Celestine,* Sulphuric Acid, 43.6 ; Strontia, 56.4. Some very fine specimens of this mineral may be found in the collection associated with the Sulphur of Sicily.

(2.) Strontianite.*—Carbonate of Strontia. Strontia, 70.1 ; Carbonic Acid, 29.9. Found at Schoharie, New-York ; Strontian, Argyleshire, England, &c.

6. *Lime.*—(1.) Gypsum*—Sulphate of Lime. Composition, Lime, 32.9 ; Sulphuric Acid, 46.3 ; Water, 20.8. The principal varieties are as follows : Selenite,* a transparent foliated Gypsum ; Radiated Gypsum ; Fibrous* do ; Snowy* do., and Alabaster. Selenite is found at Lockport, in N. Y. State In the Mammoth Cave, Kentucky, alabaster occurs in singularly beautiful imitations of shrubs, flowers, leaves or vines.

Gypsum, when ground to a fine powder, forms the common Plaster of Paris. Anhydrite is a form of Gypsum, having no water in its composition.

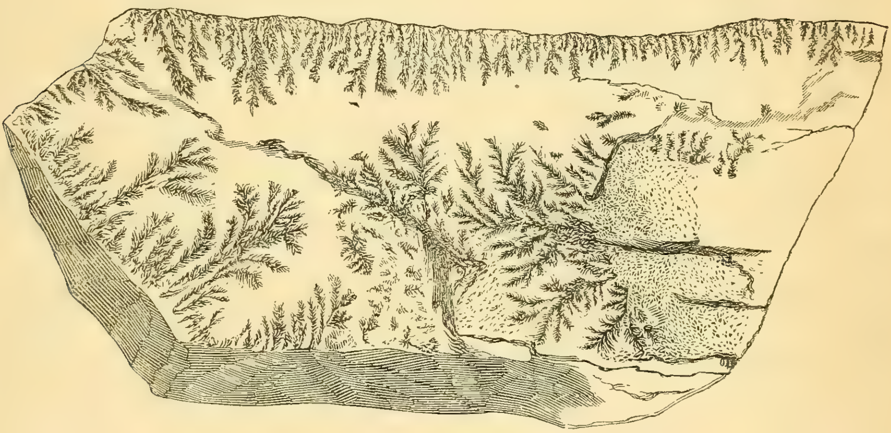

Fig. 19.

Fig. 19.—(2.) *Calcite—Carbonate of Lime.*—Lime, 56.3 ; Carbonic Acid, 43.7.

Perhaps no mineral is so widely diffused, or presents such a diversity of shape and color, as does the Carbonate of Lime. The more important varieties are :

Nail-head Spar,* so called from the resemblance which its crystals bear to the head of a wrought nail. Found at Hoboken, N. J., and elsewhere.

Dogtooth Spar,* so called from the shape of its crystals. Found at Lockport, N. Y.

Iceland Spar,* transparent and highly crystalline, first brought from Iceland.

Satin Spar,* a finely fibrous variety, with a satin lustre.

Chalk—White* and Earthy, without lustre, found abundantly at Dover, England.

Rock Milk,* white and earthy, like Chalk, but still softer and very fragile.

Calcareous Tufa, formed by deposition from water.

Fig. 20.

Fig. 20.—Stalactite* and Stalagmite.* Of these there is a fine assemblage at the Lyceum, presented chiefly by Lieut. Misroon, collected on the Island of Majorca. The Stalactites form on the roofs of caves by the gradual dropping of water, which is saturated with the Carbonate of Lime. Stagmites form upon the floors from the same cause. These grottoes often present scenes of great beauty.

Limestone is a general name for all the massive varieties of Carbonate of Lime.

Any of the varieties of this mineral lose their carbonic acid when heated, and become quick-lime.

3. *Arragonite.*—A similar mineral, found at Lockport, New-York; Arragon, Spain, &c.

4. *Dolomite.**—Magnesiam, Carbonate of Lime. Comp. Carbonate of Lime, 54.2; Carbonate Magnesia, 45.8.

*Dolomite.**—Proper, Pearl Spar,* Rhomb Spar,* Gurhofite.* Obtained at Quarantine, Richmond Co., Staten Island; Smithfield, R. I., &c., &c.

5. *Apatite.**—Phosphate of Lime. Composition, Phosphate of Lime, 92.1; Fluoride of Calcium, 7.9. The crystallized varieties of this mineral look well enough to eat, and one might suppose that its name arose from this circumstance, giving one an appetite. The true origin of the word is from the Greek *apatao*, to deceive, from the mistakes which mineralogists have made in determining its true character.

6. *Fluor Spar.**—Fluate of Lime. Composition, Fluorine, 47.7; Calcium, 52.3. Derives its name from its use in reducing copper and other ores, being used as flux. Found at Derbyshire, England, etc.

7. *Magnesia.*—Epsom Salt, Sulphate of Magnesia. Composition, Magnesia, 16.7; Sulph. Acid, 32.4; Water, 50.9. Found at Mammoth Cave, Ky., etc. Too great a familiarity with this mineral is not desirable; we will therefore pass on.

*Magnesite.**—Carbonate of Magnesia. Carbonic Acid, 51.7; Magnesia, 48.3. Found in magnesian rocks, as Serpentine, at Hoboken, N. J.

. Brucite,* Nemalite,* Hydromagnesite,* Boracite, are other Salts of Magnesia.

8. *Alumina—Native Alum.* Composition varying. Found in Italy; Iquique, Peru, etc.; has an astringent taste. Is said to be abused for the manufacture of bread.

Alum Stone.—Wavellite,* Turquois and Gibbsite, are other varieties of aluminous compounds.

CLASS VI.—EARTHY MINERALS.

1. *Silica.*—Quartz is Silica, nearly pure. It is a constituent of many rocks, and composes most of the pebbles of the soil or gravel beds.

Fig. 21.

Fig. 21.—Varieties, *Rock Crystal,** or pure pellucid Quartz, very fine specimens of which are found in Herkimer Co., N. Y.

*Amethyst.**—A violet colored variety, abundant at Little Falls, N. J.

*Rose Quartz.**—Found at Albany and Paris, Me. *Smoky Quartz,** Goshen, Mass., etc., *Milky**—do. *Prase,** a beautiful green variety. *Ferruginous, Chalcedony,** *Chrysoprase, Carnelian**—often cut and polished for the more common jewelry. *Agate,** used for the same purpose as Carnelian. *Onyx,* the material used for Cameos; the figure is carved out of one layer, and stands in relief on another. *Cat's Eye,* having a peculiar glaring reflection like the eye of a cat. *Flint,** *Jasper,** *Blood Stone,* so called from the bright red spots which cover its surface. *Lydian Stone,* used by jewelers to determine the quality of an alloy of gold.

The above are the more important varieties of this mineral. It will be seen that a large collection might be made of this one species. Indeed, many a young collector has experienced the mortification of hearing his whole cabinet summarily disposed of, under the talismanic words, Quartz and Calcite. But give him a different name for each variety, and he will

open his eyes with astonishment at the big words he has collected. What's in a name?

Opal.—Composition, Silica, 5 to 12 per cent. of water; often used in more valuable jewelry. It was well known to the ancients, who called it *Paideros*, Love-child. Noble Opal and Fire Opal are highly valued. More common and less handsome varieties are—Semiopal,* Hydrophane, Cacholong, Hyalite,* Menilite, Wood Opal,* &c. The Noble Opal is found at Cashau, in Hungary, and with Fire Opal on the Faroe Islands. Hyalite and Semi Opal are the only varieties found in the United States.

2. *Lime*—Tabular Spar.* Composition, Silica, .52; Lime, .48. Crystallizes in flat tables; found at Willsboro, N. Y.

*Datholite.**—Borosilicate of Lime. Silica, 37.4; Lime, 35.7; Boracic Acid, 21.3; Water, .7. Found in glassy complex crystals at Roaring Brook, Conn Used in the manufacture of Boracic Acid.

3. *Magnesia.*—Talc.* Composition, Silica, Alumina; water in variable proportions; has a soft, greasy feel; color white or green. Principal varieties are, Foliated Talc, Soapstone, Indurated Talc. Found abundantly at Staten Island, N. Y. Soapstone is sawn into slabs and used for fire stones in stoves and furnaces.

*Serpentine.**—A rock of a light oil green color, used sometimes as a building stone. Found in New-York State, at many places.

Chlorite, Nephrite,* Meerschaum and Schiller Spar,* are similar minerals